# INDEXES TO THE JOURNAL

Compiled by

THE AMERICAN CERAMIC SOCIETY

ROSS C. PURDY, *Editor*
EMILY C. VAN SCHOICK, *Assistant Editor*
VIRGINIA BENEDICT, *Assistant*

**Vol. 21** **December, 1938** **No. 12**

## AUTHOR INDEX

The reference number in parentheses refers to the *monthly* issue of the *Journal;* the number following is the *page* number.

**Austin, J. B.** Linear thermal expansion of "beta-alumina," (10) 351–53.

**Babcock, C. L.** See Burch, O. G.
**Badger, A. E.** See Schwalbe, W. L.
**Barker, G. J., and Truog, Emil.** Improvement of stiff-mud clays through *p*H control, (9) 324–29.
**Barrett, E. P.** Reply to Heine discussion, (6) 214–15.
**Barrett, L. R.** See Parmelee, C. W.
**Betz, G. C.** Lithium minerals and compounds in ceramics, (5) 189–91.
**Bevis, R. E.** See Irwin, J. T.; McIntyre, G. H.
**Biscoe, J.** See Warren, B. E.
**Biscoe, J., and Warren, B. E.** X-ray diffraction study of soda-boric oxide glass, (8) 287–93.
**Blakely, A. M.** Life history of a glaze: I, Maturing of a whiteware glaze, (7) 239–42; II, Measurement of stress in a cooling glaze, (7) 243–51.
**Boyd, J. E., Jr.** Pyrometric properties of spodumene-feldspar mixtures, (11) 385–88.
**Bradley, C. A., Jr.** Measurement of surface tension of viscous liquids, (10) 339–44.
**Burch, O. G., and Babcock, C. L.** Effect of glass color on setting rates in manufacture of glass bottles, (10) 345–51.

**Ellefson, B. S., and Taylor, N. W.** Surface properties of fused salts and glasses: I, Sessile-drop method for determining surface tension and density of viscous liquids at high temperatures, (6) 193–205; II, Contact angle and work of adhesion on gold and platinum in various atmospheres, (6) 205–13.
**Everhart, J. O.** Some special wear-resisting materials for clay machinery parts, (2) 69–72.

**Faust, G. T., and Peck, A. B.** Refractive indices of some glasses in ternary system $K_2O \cdot 4SiO_2$–$Fe_2O_3$–$SiO_2$, (9) 320–24.
**Fellows, R. L.** See Lange, L. A.

**Graham, R. P., and Sullivan, J. D.** Critical study of methods of determining exchangeable bases in clays, (5) 176–83.

**Hall, F. P., and Insley, H.** Supplement to "a compilation of phase-rule diagrams of interest to the ceramist and silicate technologist," (4) 113–64.
**Harrison, W. N.** See Judd, D. B.
**Heine, J. H. D.** Comment on Barrett and Taylor's "Method for studying flow characteristics of glasses and slags at elevated temperatures," (6) 213–15.
**Henry, E. C., and Taylor, N. W.** Acid and base binding capacities and viscosity relations in certain whiteware clays, (5) 165–75.

**Insley, H.** See Hall, F. P.
**Irwin, J. T., and Bevis, R. E.** Modification of Bingham plastometer, (2) 66–68.

**Johnson, J. S.** Correlation of electrical and thermal properties of building brick, (3) 79–85.
**Judd, D. B., Harrison, W. N., and Sweo, B. J.** Optical specification of vitreous enamels, (1) 16–23.

**Kautz, Karl.** Chemical determination of metallic particles and oxides of iron, nickel, and cobalt in fired ground coats, (9) 307–11; Random experiments on enamel adherence, (9) 303–307; Reply to Staley's discussion of "Critical analysis of some statements and experiments on adherence of sheet-steel ground coats," (9) 311–15.
**Kerr, P. F.** A decade of research on nature of clay, (8) 267–86.
**Kraner, H. M.** Some considerations in production of fused mullite for refractories, (10) 360–66.

**Lampman, C. M.** Effect of different bodies on some wetting and flow characteristics of glazes, (7) 252–58.
**Lange, L. A., and Fellows, R. L.** Use of water elutriator in addition to screen tests in determining fineness distribution of milled enamel, (9) 297–303.
**Lintz, E. H.** Use of talc and pyrophyllite in semivitreous dinnerware bodies, (6) 229–37.
**Loomis, G. A.** Grain size of whiteware clays as determined by the Andreasen pipette, (11) 393–99.

**Manson, M. E.** Grinding dry-process enamel and its effect on working properties, (9) 316–19.
**Marbaker, E. E.** See Phelps, S. M.
**McIntyre, G. H., and Bevis, R. E.** Frit solubility: II, Controlled variables of frit composition and their relation to enamel consistency, (5) 184–88.
**McKinley, J. M., and Robinson, R. R.** Investigation of power reduction and moisture control in waste-heat drying, (3) 104–108.
**Meyer, W. W.** Computation of heat treatments for whiteware bodies, (3) 75–79; see also Shelton, G. R.
**Mueller, Hans.** Theory of photoelasticity, (1) 27–33.

**Nead, J. H.** See Porter, F. R.
**Norton, F. H.** An instrument for measuring the workability of clays, (1) 33–36.
**Norton, F. H., and Speil, S.** Fractionation of a clay into closely monodispersed systems, (10) 367–70; Measurement of particle sizes in clays, (3) 89–97.

**Parmelee, C. W., and Barrett, L. R.** Some pyrochemical properties of pyrophyllite, (11) 388–93.
**Pask, J. A.** Quadrant-chart type nomograph applied to clay slips, (3) 101–103.
**Peck, A. B.** See Faust, G. T.
**Phelps, S. M., and Marbaker, E. E.** Karcite, a new ceramic material for laboratory equipment, (3) 108–11.
**Porter, F. R., and Nead, J. H.** Characteristics of iron and steel for porcelain enameling, (1) 9–16.

**Rea, R. F.** Temperature measuring cones, (3) 98–101.
**Rexford, E. P.** See Thompson, C. L.
**Robinson, R. R.** See McKinley, J. M.
**Rueckel, W. C.** Failure of coke-oven walls by reaction with coal ash, (10) 354–60.

**Schaal, R. B.** Study of metallographic characteristics and enameling qualities of certain cast irons, (1) 24–26.
**Schwalbe, W. L., Badger, A. E., and Silverman, W. B.** Tensile tests of glasses, (10) 333–38.
**Shelton, G. R., and Meyer, W. W.** Nature of the glass phase in heated clay materials: II, Effect of rate of heating on glass phase and physical properties of whiteware bodies, (11) 371–85.
**Silverman, W. B.** See Schwalbe, W. L.
**Sosman, R. B.** Pyrometry and the steelmaker's refractories, (2) 37–49.
**Speil, S.** See Norton, F. H.
**Spencer-Strong, G. H.** Examination of an unusual cast iron, (2) 60–65; Some factors influencing properties of acid-resisting enamels, (1) 1–8.
**Stevens, F. J.** Notes on use of pyrophyllite as an electrical insulator, (9) 330–31.
**Sullivan, J. D.** See Graham, R. P.
**Sweo, B. J.** See Judd, D. B.

**Taylor, J. A.** Reply to Heine discussion, (6) 214.
**Taylor, N. W.** Law of annealing of glass: quantitative treatment and molecular interpretation, (3) 85–89; see also Ellefson, B. S.; Henry, E. C.
**Thompson, C. L., and Rexford, E. P.** Study of alumina-silica checker brick from regenerator of a glass tank, (2) 55–59.
**Truog, Emil.** See Barker, G. J.

**Warren, B. E.** See Biscoe, J.
**Warren, B. E., and Biscoe, J.** Fourier analysis of X-ray patterns of soda-silica glass, (7) 259–65; Structure of silica glass by X-ray diffraction studies, (2) 49–54.
**White, H. E.** Electrically fused magnesia, (5) 216–29.

# SUBJECT INDEX TO THE JOURNAL

## Volume 21, 1938

The reference number in parentheses refers to the *monthly* issue of the *Journal;* the number following is the *page* number.

A Formula Index of Phase Diagrams published in the *Journal* for 1938 follows this Subject Index.


**Acid resistance** of enamels, sheet-iron, cover-coat type, (1) 1; classification, (1) 4; surface characteristic, scratch hardness, and reflectance studies, (1) 5.
**Acids** and bases in clays, chemical behavior, (5) 165.
**Adams-Williamson law,** (3) 85.
**Alkali and alkali earth-silicate systems,** liquidus relations for cristobalite in, (4) 150.
**Alkali-bearing clay minerals,** detailed data, (8) 279.
**Alkali-silicate systems,** melting relations, (4) 150.
**Alkali treatment** for clays, effect, (9) 324.
**Allophane,** origin and data, (8) 273.
**Alumina-silica checker brick.** See *Refractories, checker brick.*
**Aluminous material,** fusing process, (10) 361.
**Aluminum silicate,** fused (photomicrograph), (10) 363.
**Amadori, M.,** equilibrium diagrams: $As_2O_5$–$K_3AsO_4$, and $As_2O_5$–$Na_3AsO_4$, (4) 123; $As_2O_5$–PbO, (4) 122; $MoO_3$–$K_2MoO_4$, (4) 124; $Na_4As_2O_7$–$K_4As_2O_7$, $Na_2CrO_4$–$K_2CrO_4$, $Na_2MoO_4$–$K_2MoO_4$, and $Na_2WO_4$–$K_2WO_4$, (4) 127; $PbF_2$–$Pb_3(AsO_4)_2$, (4) 123; $PbF_2$–$Pb_3(VO_4)_2$, (4) 124; PbO–$V_2O_5$, (4) 122; $WO_3$–$K_2WO_4$, (4) 124.
**Amblygonite,** chemical analysis, (5) 189.
**Amorphous solids,** calculations, (1) 28.
**Anauxite,** origin and data, (8) 270; and kaolinite, chemical analyses, (8) 274; Gruner's structural data, (8) 283.
**Andreasen pipette** for grain size of whiteware clays, (11) 393; photo, (11) 394.
**Angle-of-contact method** for study of glaze adherence and ability to wet bodies, (7) 252.
**Annealing** of glass, law of, quantitative treatment and molecular interpretation, (3) 85.
**Apparatus,** Andreasen pipette for grain size of whiteware clays, (11) 393; photo, (11) 394.
for bubble-pressure method for surface tension of glass, (10) 340.
centrifuge, with baskets for sedimentation tubes, (3) 91–92.
for clayworking, wear-resisting materials, (2) 69.
for cooling-rate tests on glass, description (diagram), (10) 346.
electrical and thermal conductivity testing cabinet, (3) 80–81.
for measuring workability of clays, (1) 33; diagram, (1) 34.
"photox photoelectric" reflectometer, Hunter type, (1) 19.
for sessile-drop method for measurements on glass, (6) 195–96.
for surface-tension measurements, (6) 206.
for tensile tests on glass fibers (design and photo), (10) 334.
thermal-expansion (photo), (6) 227.
water elutriator for fineness test of milled enamels, (9) 297; photo, (9) 299.
**Arrhenius equation** for vitrification process of feldspathic whiteware bodies, (3) 75.
**Atoms,** refractions and polarizabilities of, (1) 29.
**Autoclave test** for dinnerware bodies (tabular data), (6) 231.
**Autoclaving** and delayed contraction, change of glaze stress due to, (7) 249.

**Barrett and Taylor,** comment on method for studying flow characteristics of glass and slags at high temperatures, (6) 213.
**Base binding capacities** of whiteware clays, (5) 165.
**Base exchange** of colloidal portions, (9) 325; in clays (tabular data), (9) 326.
determinations in clays, methods, (5) 177; metallic bases, analysis, (5) 179; analysis, effect of sulfates on proximate determinations, (5) 181; analysis of bentonite, (5) 183.
studies on clay mineral group, (8) 283; comparative capacity of minerals, (8) 284.
**Bashforth and Adams,** integration and density calculations, (6) 195; tabular data, (6) 201.
**Beck, E.,** $MgF_2$–$CaF_2$, equilibrium diagram, (4) 117.
**Beidellite,** synthetic, spherulites of (photomicrograph), (8) 275; origin and data, (8) 276; and nontronite, chemical analyses, (8) 279.
**Belladen, L.,** $Bi_2O_3$–PbO, equilibrium diagram, (4) 121.
**Bentonite,** base-exchange analysis of, (5) 183; origin and photo, (8) 275.
**Beta-alumina,** linear thermal expansion, (10) 351.
**Bibliographies** (literature references), clay minerals (see footnotes to Kerr paper), (7) 268–85.
clays, colloidal nature of, (5) 165–68, (5) 173–74.
magnesite refractories, (6) 216, *et seq.*
particle size of clays, (3) 90.
pyrophyllite, (11) 388.
surface properties of fused salts and glasses, (6) 193, *et seq.*
**Bingham plastometer,** modification of, (2) 66.
**Birefringence,** causes of, (1) 32.
**Boeke, H. E.,** $Na_2MoO_4$–$Na_2WO_4$, equilibrium diagram, (4) 128.
**Booth, H. S., Starrs, B. A., and Bahnsen, M. J.,** $Na_2SiO_3$–NaF, equilibrium diagram, (4) 123.
**Boric oxide** in glass, anomalous properties of, (8) 290.
**Bowen, N. L., and Schairer, J. F.,** diagram of $Fe_2O_3$ content of liquid mixtures of MgO, $SiO_2$, and Fe oxide in equilibrium with metallic iron, (4) 135; MgO–FeO–$SiO_2$, phase relations at 1527°C and 1550°C, (4) 136; at 955°C, 1050°C, 1150°C, 1250°C, 1305°C, and 1450°C, (4) 137.
equilibrium diagrams: FeO–MgO, (4) 117; Mg–Fe olivines; Mg–Fe pyroxenes; and MgO–FeO, (4) 149; MgO–FeO–$SiO_2$, (4) 136, (4) 149; $Mg_2SiO_4$–$Fe_2SiO_4$, (4) 126; $NaAlSi_2O_6$–$Fe_2SiO_4$, (4) 129; $NaAlSiO_4$–FeO–$SiO_2$, (4) 143.
**Bowen, N. L., Schairer, J. F., and Posnjak, E.,** equilibrium diagrams: CaO–FeO–$SiO_2$, (4) 133, (4) 149, (4) 150; CaO–FeO–$SiO_2$, phase relations at 1285°C, (4) 133; at 1160°C, 1193°C, 1200°C, 1220°C, 1227°C, 1250°C, 1272°C, and 1280°C, (4) 134; at 700°C, 980°C, 1093°C, 1097°C, 1105°C, and 1130°C, (4) 135.
**Brick,** building: electrical and thermal properties of, correlation of, (3) 79; current-time relations (curve), (3) 82; electrical and thermal conductivity studies, discussion and conclusions, (3) 84.
**Brownmiller, L. T.,** CaO–$K_2O$–$Al_2O_3$, equilibrium diagrams, (4) 130–31.
**Bubble-pressure apparatus,** diagram, (10) 340.
**Bubble-pressure method** *vs.* capillary-rise method for surface-tension tests on molten glass, (10) 342; values obtained, (10) 344.
of Jaeger and Parmelee and Harman, (6) 193.

**Capillary-rise method** *vs.* bubble-pressure method for surface-tension tests on glass, (10) 342.
**Carbonates,** soluble, effect on base-exchange analysis, (5) 181.
**Casagrande hydrometer method** for purity of clay fractions, (10) 368; fraction characteristics by, (10) 369.
**Casagrande sedimentation method** for particle-size measurement of clays, (3) 89.
**Cast irons (castings).** See also *Metals.*
enameled: unetched (photomicrographs), (2) 61–65; graphite formation and inclusions (photograph), (2) 63.
metallographic (tabular data), (2) 60.
raw, heavy pearlite, steadite, and inclusions (photomicrographs), (2) 64–65.
**Caustic calcine,** specific gravity and chemical data, (6) 224.
**Ceramic bodies** for Karcite, (3) 109.
lepidolite in, (5) 190.
**Checker brick,** alumina-silica in glass-tank regenerators, studies, (2) 55; see also *Refractories.*
**Cheesbrough method** for metallic particles in fired ground coats, (9) 308.
**Clay apparatus,** wear-resisting materials for, (2) 69.
**Clay bodies,** glazes on, effect of wetting and flow characteristics, (7) 252; angles of contact of glazes on (curves), (7) 256–57; flow of glazes, (7) 255–56; radii of curvature of glazes, (7) 257.
**Clay minerals,** classification of (tabular data), (8) 268; Gruner's structural data, (8) 283.
internal structure and tetrahedral and octahedral arrangements, (8) 281.
water content, (8) 284.
**Clay slips,** chemical and physical behavior of, (5) 165; preparation, (5) 168.
quadrant-chart nomograph, (3) 101–102.
**Clays,** acid and calcareous, $p_H$ control of (tabular data), (9) 327.
ball clays and kaolins, grain-size (curves), (11) 396–98; grain-size (tabular data), (11) 399.
base exchange of colloidal portions, (9) 325; exchangeable bases in (tabular data), (9) 326.
base-exchange tests, exchange or combining capacity, (5) 167; exchangeable bases in, (5) 176; chemical analysis, (5) 177.
clay dispersion, effect, (9) 325.
colloidal nature, (5) 165; as colloidal electrolytes, (5) 166.
flint fire clays, effect of particle size on base exchange capacity, (5) 182.
flow behavior, (5) 168.
fractionation into closely monodispersed systems, (10) 367; purity of fractions, (10) 368; flow sheet for coarse and fine fractions, and characteristics, (10) 369.
heated clay materials, nature of glass phase in, (11) 371; clay-glass reactions; and glass phase development during heat treatment, (11) 381.
hydrogen-ion measurements, (5) 167.
lamination in, effect of $p_H$ control, (9) 328.
leaching analysis by percolation, (5) 178.
nature of, decade of research, (8) 267.
neutral salt reactions, (5) 167.
particle size: mathematical study, (10) 368; fraction distribution (curve), (10) 370.
particle size of: measurement, (3) 89; literature review, (3) 90; long arm centrifuge (diagram), (3) 92; precision of results, (3) 96.
physical properties *vs.* vitrification range, relation of, (11) 383; heating rate, effect in vitrification range, (11) 383–84.
proper dispersion, (10) 370.
rate of twisting, effect on stress-strain curve, (1) 36.
settling rates from Stokes' law (curve), (10) 368.
size distribution (curves), (3) 94–95; plotted with linear coördinates, (3) 93.
stiff-mud, $p_H$ control for, effect, (9) 324.
ultimate $p_H$ of, curves: Fla. clays, (5) 170–71; Ky. ball clay, (5) 171–72; Tenn. ball clay, (5) 172–73.
whiteware, acid and base binding capacities and viscosity relations, (5) 165.
whiteware, grain-size tests by Andreasen pipette method, (11) 393.
workability of: apparatus for measurement of, (1) 33; tests, (1) 34; properties, (1) 36.
**Coal,** sink-and-float portions of, fusion points (tabular data), (10) 355.
**Coal ash,** failure of coke-oven walls by reaction with, (10) 354.
**Coke plant,** brick from, chemical analyses, (10) 356.

**Coking** and impregnation of body for karcite, (3) 111.
**"Colloidal electrolytes,"** clays as, (5) 166.
**Colloidal nature** of clays, (5) 165.
**Color of glass bottles, effect on setting rates,** (10) 345.
**Conductivity, electrical,** ratio as function of porosity (curves), (3) 82, (3) 84.
electrical and thermal, of building brick, correlation, (3) 79; test cabinet, (3) 80–81.
thermal, of refractory oxides, (6) 226.
**Cones,** Orton and Seger, history; and "pyrometric," definition and history, (2) 38.
salt compositions, (3) 100, (3) 101.
temperature measuring, independent of heating rate, (3) 98.
**Consistency** of enamel slips (literature review), (2) 66.
**Consistency measurements,** Gardner mobilometer for, (5) 184–85.
**Consistometer,** Irwin, description and diagram, (2) 66–67; consistency graphs, (2) 68.
**Contact angle** and work of adhesion on gold and platinum in various atmospheres, (6) 205.
**Cooling** of glass, tests and apparatus, (10) 346.
**Corundum** (alpha-alumina), expansion curves, (10) 352.
**Crazing** of glazes (tabular data), (7) 249.
**Cristobalite,** liquidus relations in alkali and alkali earth–silicate systems, (4) 150.
and vitreous silica, comparison of patterns, (2) 51.
**Cristobalite mass** in flue edge of liner brick, (10) 358.
**"Crystal,"** definition, (2) 52.
**Crystallite theory** of glass, (2) 49; "crystallite," objection to use of term, (2) 53.
**Crystals,** atomistic and photoelastic properties, (1) 27; lattice and cubic effects, (1) 28.
cubic, effect of shear on structure (curve), (1) 31.

**Dickite,** nacrite, and halloysite, chemical analyses, (8) 274.
origin and description, (8) 269; dickite crystals on dolomite crystal; (photomicrograph), (8) 270; Gruner's structural data, (8) 283.
table of interplanar spacing in Angstrom units for nacrite, dickite, and kaolinite, (8) 269.
**Die liners,** metals for, chemical composition and wear-loss data, (2) 72.
**Dinnerware,** flint and pyrophyllite in: shrinkage and modulus of rupture data, (6) 235; absorption, moisture expansion, and glaze fit data, (6) 236; thermal shock, autoclave, and color data, (6) 237.
glaze fit chart for, (6) 231.
semivitreous, talc and pyrophyllite in, (6) 229.
thermal shock (tabular data), (6) 231.
**Dry-pan screen plates,** wear behavior, (2) 71.
**Drying,** drier fans, power costs, comparison of, (3) 105; drier system, comparative performance, (3) 107.
humidification, power and water costs, (3) 106.
waste-heat, power reduction and moisture control in, (3) 104.

**Ebert, F., and Cohn, E.,** $MgO$–$ZrO_2$, equilibrium diagram, (4) 122.
**Eggertz method** for metallic particles in fired ground coats, (8) 308.
**Electrical conductivity.** See *Conductivity.*
**Electrical insulators,** pyrophyllite for, (9) 330.
**Electrically fused magnesia,** historical review, (6) 216.
**Electrodes,** quinhydrone, for determination of exchanged hydrogen, (5) 181.
**Electrodialysis** for analysis of clays, (5) 177.
for removing interfering adsorbed electrolyte from clay, (5) 165.
**Electrolytes,** colloidal, in clays; and effect on ceramic clay structure, (5) 166.
**Elutriation test** and apparatus for milled enamels, (9) 297.
**Enameled castings.** See *Cast irons (castings); Metals.*
**Enamels,** acid resistance of, classification, (1) 4–5; reflectance comparison, (1) 4.
acid-resistance tests: effect of metal gage, firing time schedule, firing temperature, drying, and specific gravities, (1) 3.
acid-resistance tests: results of metal gage, firing treatment, specific gravity,

**Enamels** *(continued)*
and drying, and surface characteristic, and scratch hardness, (1) 5; applications opacity and hardness of, (1) 6.
acid-resisting: factors influencing properties, (1) 1; reflectance *vs.* application weights (curves), (1) 6; tests (tabular data), (1) 7–8.
adherence on sheet steel, tests, (9) 303.
castings for, studies, (1) 24.
for chromium, iron, nickel, and copper, tests, (9) 314.
consistency of: controlled variables of frit composition and their relation to, (5) 184; $Na_2O$ to $B_2O_3$ ratio, effect, (5) 185.
copperheads (photomicrograph), (1) 10.
defects in: blisters and pits on flat surface from metal castings, (1) 24; blistering (photomicrographs), (2) 62–65.
dry milling of (tabular data), (9) 317.
dry-process, grinding and effect on working properties, (9) 316.
frits, change with time of drop shape on carbon in nitrogen atmosphere (photo), (6) 197.
ground-coat, volatilization; and loss in weight at 1600°F, (9) 305.
milled with and without water (curves), (9) 317.
on platinum after entrance of oxygen (photomicrograph), (6) 207.
relative mobility and yield value *vs.* total solubility; relative yield value and relative mobility *vs.* $Na_2O$ to $B_2O_3$ ratio, (5) 187.
surface tension, density, and other data on, (6) 203.
grippable surface theory, (9) 314.
ground- and cover-coat, consistency of (curves and tabular results), (2) 68.
ground-coat, fired: chemical methods for metallic particles and iron, nickel, and cobalt oxides, (9) 307; free FeO and metallic particles in, (9) 308, (9) 311; FeO film under, (9) 310; chemical analyses, (9) 311.
heated in hydrogen, reduction of, (9) 304; reduction by gases evolved from commercial iron, (9) 305.
metallic nickel and cobalt content on iron surface, (9) 309.
total iron, nickel, and cobalt oxides in removed particles, (9) 309; analysis of iron surface, (9) 313.
volatilizing and "burning up," (9) 311; primary and secondary oxidation in firing, (9) 312.
milled: fineness distribution in, water elutriator for, (9) 297, (9) 299; fineness test method, (9) 298; comparative data, (9) 299–302.
milled, screen test *vs.* elutriation test (tabular data), (9) 301.
milling with water (tabular data), (9) 318.
pearlite, bubbles, and ground-coat layer (photomicrograph), (1) 10.
porcelain, iron and steel for, characteristics, (1) 9.
Porcelain Enamel Institute tests, (1) 2.
reflectance, apparatus for tests, (1) 19.
reflectance: contrast-ratio method and tabular data, (1) 19–20; reflectivity method and tabular data, (1) 20, (1) 22; dual thickness method, (1) 22.
reflectance *vs.* thickness of material, relation of, (1) 16.
sheet-iron cover-coat, acid resistance, (1) 1.
slips for, consistency of (literature review), (2) 66.
types in mill formulas for acid-resistance tests, (1) 2.
vibrating screen for, data on rate of passing, (9) 318.
vitreous, optical specification, (1) 16.
**Equilibrium diagrams,** compilation, (4) 113–64; list for 1933, (4) 113–15; list in supplement, (4) 115; see also separate *Formula Index for Phase Diagrams.*
silica, stable and unstable state of, (2) 40.
**Exchanged metallic bases,** method, (5) 179.

**Fans,** drier type, cost data, (3) 105–107.
**Faust, G. T.,** $K_2O \cdot Al_2O_3 \cdot 6SiO$–$Fe_2O_3$, equilibrium diagrams, (4) 144; relation between refractive index and iron content of glasses along line $X$-$Fe_2O_3$, (4) 149.
**Fedotiev, P. P., and Ilyinskii, W. P.** (Fedotieff and Iljinsky), $CaF_2$–$NaF$, equilibrium diagram, (4) 116.
**Fedotiev, P. P., and Timofeev, K.,** equilibrium diagrams: $KF$–$3KF \cdot AlF_3$ and $3KF \cdot AlF_3$–$AlF_3$, (4) 118; $LiF$–$3LiF \cdot AlF_3$ and $3LiF \cdot AlF_3$–$AlF_3$, (4) 119.

**Feldspar,** feldspar-glass, mullite and blebs during heat treatment, (11) 382.
and lithium ores, analyses, (5) 189.
potash and soda, and spodumene: pyrometric properties, (11) 385; particle-size distribution curves, (11) 386; P.C.E. of points on triaxial diagram, (11) 386–87.
**Feldspathic whiteware bodies.** See *Whiteware bodies.*
**Flint, E. P., and Wells, L. S.,** equilibrium diagrams, $CaO$–$B_2O_3$–$SiO_2$, (4) 138–40; binary and pseudobinary systems, (4) 141.
**Flint** and pyrophyllite in dinnerware bodies, physical tests, (6) 235–37.
**Flint fire clays.** See *Clays.*
**Flow** of glazes on clay bodies (curves), (7) 255.
**Flow characteristics** of clays, (5) 168.
**Flow data** on glass and slags at high temperatures, correction on, (6) 213.
**Flow sheet** of clay fractions, (10) 360.
**Fluorides** and oxides (tabular index), (4) 164.
**Forsterite needles** (photomicrograph), (6) 222.
**Fourier analysis,** formula for weighted radial distribution; and X-ray patterns of soda-silica glass, (7) 259.
for radial distribution of vitreous $SiO_2$, (2) 50.
for X-ray intensity curves for soda-boric oxide glass, (8) 288; for radial distribution curves, (8) 289.
**Fractionation** of clays into closely monodispersed systems, (10) 367.
**Frits,** chemical composition of (tabular data), (7) 253.
solubility of, controlled variables and relation to enamel consistency, (5) 184.
**Furnaces,** Geophysical crystallizing (diagram), (9) 321; wiring diagram, (9) 322.
glaze stress type (diagram), (7) 244.
open-hearth, refractories for, and temperature measurement, (2) 39; open-hearth roof, pyrometric studies, (2) 43.
Photronic cell for pyrometric use, (2) 43.
**Fused magnesia,** historical review, (6) 216.
**Fused mullite** for refractories, studies, (10) 360.
**Fused salts** and glasses, surface properties, I, (6) 193; II, (6) 205.
surface tension and density at high temperatures, sessile-drop method, (6) 193.

**Gardner mobilometer** for consistency measurements, (5) 184–85.
**Geller, R. F., and Bunting, E. N.,** equilibrium diagrams: $K_2O$–$PbO$–$SiO_2$, (4) 130, (4) 132; $PbO$–$B_2O_3$, (4) 120–21.
**Glass, annealing** law, quantitative treatment and molecular interpretation, (3) 85; annealing constant values at various temperatures (tabular data), (3) 87.
atomic effect from deformability of oxygen ions, (1) 31.
bottles, effect of color on setting rates in production, (10) 345; test procedure, (10) 347; test results, (10) 348.
cold drop measurements, (6) 199.
colored and colorless, working range temperature, (10) 345; colored, cooling rates (curves), (10) 348, (10) 349–50.
copper-bearing, reduction of, (9) 313.
crystallite theory, (2) 49.
with $CuO$, reduction of, (9) 305.
density calculations of Bashforth and Adams, (6) 195.
discordant surface-tension values, (6) 194.
FeO content along $K_2O \cdot 6SiO_2$ section (tabular data), (9) 323.
fibers, effect of flaws in tensile test specimens, (10) 333.
fibers, fracture tests and appearance of fracture, (10) 335; fracture or rupture tests (curves), (10) 336–37.
fibers, tensile tests, (10) 333; preparation of specimens, (10) 333; apparatus, (10) 334; chemical composition, (10) 338.
flow characteristics at high temperatures, correction on method, (6) 213.
and fused salts, surface properties, I, (6) 193; II, (6) 205.
glass phase in heated clay materials, nature of, (11) 371; clay-glass reaction with heat treatment, (11) 381.
homogeneous and strained, inner field structures, (1) 29.
lead, "atomic" contribution to photoelastic constant (curve), (1) 32.
Lorentz-Lorenz equation, (1) 29; validity of (curve), (1) 30.
molten, surface-tension measurements, (10) 342.

**Glass** (*continued*)
"photoelastic effect" described, (1) 27.
Pyrex-brand, temperature dependence of annealing constant, (3) 87.
radial distribution obtained from Fourier analysis, (2) 50.
random-network theory, (2) 49.
refraction in, O ions cause of, (1) 31.
refractive indices in ternary system $K_2O$–$4SiO_2$–$Fe_2O_3$–$SiO_2$, (9) 320.
silica, structure by X-ray diffraction studies, (2) 49.
soda-boric oxide, boron-oxygen distances and boron coördination; radial distribution curves; structure, (8) 289; anomalous properties; low soda content, schematic representation in 2 dimensions, (8) 290; thermal-expansion coefficient and density, (8) 291–92.
soda-boric oxide, X-ray diffraction study and sample compositions, (8) 287; X-ray intensity curves, (8) 288.
soda-silica, composition, (7) 260; structure, schematic representation in 2 dimensions, (7) 264.
soda-silica: X-ray patterns, Fourier analysis, (7) 259; X-ray intensity curves, (7) 261; radial distribution curves, (7) 262.
strain release: molecular description, (3) 86, (3) 88; quantitative relations, (3) 88.
surface area: formula, (6) 195; of sessile drop (curve), (6) 202.
surface tension and density: historical review, sessile-drop method, (6) 193; data on, (6) 203.
surface-tension measurements, materials and procedure for, (3) 198.
surface-tension studies, (10) 339; bubble-pressure apparatus for measurements, (10) 340.
vacuum and controlled atmosphere in, (6) 198.
viscosity of melt, effect, (6) 210.
work of adhesion at room temperature, formula, (6) 206.
**Glass solutions** with CuO fired on iron, tests, (9) 305.
**Glass tanks,** regenerators for, studies on destruction of alumina-silica checker brick, (2) 55.
**Glaze fit chart** for glazed dinnerware plates, (6) 231.
**Glazed surface** of coke-oven liner brick, fayalite attack, (10) 359.
**Glazes** and bodies: physical constants of various combinations (tabular data), (7) 246; stress values in various combinations (tabular data), (7) 247.
bubble formation, data on, (7) 242.
compositions of (tabular data), (7) 253.
on different clay bodies, (curves): angles of contact, (7) 256–57; radii of curvature, (7) 257.
empirical molecular formulas, (7) 253.
flow of (curves), (7) 255–56.
glaze buttons on clay bodies: contact angles at different temperatures, curvature radii (diagrams), (7) 254; radii of curvatures, (7) 255.
life history: maturing of whiteware glaze, I, (7) 239; stress measurement in cooling glaze, II, (7) 243.
quenched specimens (photomicrographs), (7) 240–42.
stress measurements, formula, (7) 243; stress curves, (7) 246–48; stress change due to delayed contraction and autoclaving, data, (7) 249.
thermal expansion of, effect on stress, (7) 249; diagram, (7) 250.
wetting and flow characteristics, effect of different bodies on, (7) 252.
**Grain size.** See also *Particle size.*
of ball clays and kaolins (curves), (11) 396–98; tabular data, (11) 399.
of whiteware clays, Andreasen pipette for tests, (11) 393; hydrometer and Kelly tube methods *vs.* Andreasen pipette, (11) 394.
**Greig, J. W.,** equilibrium diagrams: FeO–$Fe_2O_3$–$Al_2O_3$–$SiO_2$, (4) 148; FeO–$Fe_2O_3$–$SiO_2$, (4) 142.
**Greig, J. W., Posnjak, E., Merwin, H. E., and Sosman, R. B.,** $Fe_2O_3$–$Fe_2O_3$–$O_2$, equilibrium diagram, (4) 132.
**Griffith sessile-drop and sagging-fiber methods** for surface tension of glass, (6) 193.
**Groschuff, E.,** $MoO_3$–$Na_2MoO_4$, equilibrium diagram, (4) 124.
**Gruner structural data** on clay minerals, (8) 283.
**Halloysite,** origin and data, (8) 272; hydration and refractive index (curves), (8) 285.
**Hanging-cylinder method** of Washburn and Libman for surface tension of glass, (6) 193.
**Hardness** of acid-resisting enamels, method, (1) 6.
**Heat treatments** for whiteware bodies, reaction rate data and curves, (3) 76.
**Humidification,** power and water costs for brick, (3) 106.
**Hunter "photox photoelectric" reflectometer,** (1) 19.
**Hydrated mineral constituents** in clay (tabular data), (8) 268.
**Hydrogen,** exchangeable, determination with quinhydrone electrode, (5) 181.
**Hydrogen ion** *vs.* $Na_2O$:$B_2O_3$; and variation with total solubility curves, (5) 186.
**Hydrogen-ion concentration** of clays, "ultimate $p_H$," (5) 166.
**Hydrogen-ion control** of stiff-mud clays, effect, (9) 324; effect on clay laminations, (9) 328.
**Hydrogen-ion measurements** of clays, (5) 167.
**Hydrometer method** for grain-size tests, (11) 394.
**Hydromica,** origin and data, (8) 279.
**"Hydrous aluminum silicate,"** definition and data, (8) 283.

**Inorganic salts,** mixtures for cones, (3) 98.
**Insulators,** electrical, pyrophyllite in, effect, (9) 330.
**Iron, cast.** See *Metals.*
enameling, effect on fired layers of ground-coat enamels, (9) 308.
pickling of, (9) 314.
**Irwin consistometer,** description and diagram, (2) 66–67.
**Iwasé, K., and Fukusima, M.,** equilibrium diagrams: CaO·$SiO_2$–$TiO_2$ and CaO–$TiO_2$–$SiO_2$, (4) 125.
**Iwasé, K., and Nisioka, U.,** equilibrium diagrams: CaO·$TiO_2$·$SiO_2$–CaO·$SiO_2$–CaO·$Al_2O_3$·$2SiO_2$, (4) 145; CaO·$TiO_2$·$SiO_2$–MnO·$TiO_2$, (4) 130.

**Jaeger, F. M., and Germs, H. C.,** equilibrium diagrams: $PbMoO_4$–$PbWO_4$, (4) 128; PbO–$PbCrO_4$; and PbO–$PbMoO_4$, (4) 125; PbO–$PbWO_4$, (4) 126; $PbSO_4$–$PbCrO_4$, (4) 128.
**Jaeger maximum bubble-pressure method** for surface tension of glasses, (6) 193.

**Kaolinite** and anauxite, origin and data, (8) 270–72; chemical analyses, (8) 274.
crystals (photomicrographs), (8) 270–71.
Gruner's structural data, (8) 283.
hydration and refractive index of (curves), (8) 285.
prisms of, with intergrown hydromica plates, (8) 277.
**Kaolins,** crystalline structures in, (8) 268–73.
Fla., S. C., and Ga., grain-size (curves), (11) 396–98.
ultimate $p_H$ of (curves): N. C., (5) 169; Ga., (5) 170.
**Karandyeev, B.,** $CaF_2$–$CaSiO_3$, equilibrium diagram, (4) 123.
**Karcite** for laboratory equipment, new ceramic material, (3) 108; molding, drying, and firing, (3) 110; properties and uses, (3) 111.
**Kelly tube method** for grain-size tests, (11) 394.
**Klooster, H. S. van,** $NaBO_2$–$KBO_2$, equilibrium diagram, (4) 126.
**Kracek, F. C.,** liquidus relations for cristobalite in alkali and alkali earth–silicate systems, (4) 150; melting relations in alkali–silicate systems, (4) 150.
**Kubelka-Munk formula** for reflectance *vs.* material thickness, (1) 18; *vs.* McIntyre, for enamel reflectance, (1) 23.
**Kurnakov, N. S., and Zhemchuzhnui, S. F.,** NaF–KF, equilibrium diagram, (4) 116.

**Laws,** Adams-Williamson, (3) 85.
of annealing of glass, quantitative treatment and molecular interpretation, (3) 85.
Maxwell's stress, (3) 85; test of, (3) 86.
**Lea, F. M., and Parker, T. W.,** equilibrium diagrams: 4CaO·$Al_2O_3$·$Fe_2O_3$–2CaO·$SiO_2$, (4) 129; CaO–CaO·$SiO_2$–4CaO·$Al_2O_3$–$Fe_2O_3$; CaO–2CaO·$SiO_2$–4CaO·$Al_2O_3$–$Fe_2O_3$; and 2CaO·$SiO_2$–4CaO·$Al_2O_3$·$Fe_2O_3$–5CaO·$3Al_2O_3$, (4) 146; CaO–2CaO–$SiO_2$–5CaO·$3Al_2O_3$–4CaO·$Al_2O_3$·$Fe_2O_3$, (4) 146, (4) 147; CaO–2CaO·$SiO_2$–5CaO·$3Al_2O_3$–4CaO·$Al_2O_3$·$Fe_2O_3$, (4) 147.
**Leaching method** by percolation, (5) 178; leaching process, discussion, (5) 183.
**Lepidolite,** chemical analysis of, (5) 189.
**Lithium metaborate** on platinum, surface-tension measurements (photomicrograph and tabular data), (6) 209.
surface tension, density, and other data on, (6) 203.
**Lithium metasilicate,** surface tension, density, and other data on, (6) 203.
**Lithium minerals** in ceramic bodies, (5) 189.
**Lithium ores** and feldspar, analyses, (5) 189.
**Lithium salts,** data, (5) 191.
**Lorentz-Lorenz equation,** (1) 29.

**Maddocks, W. R.,** FeO–MnO–$SiO_2$, equilibrium diagrams, (4) 138.
**Magnesia,** electrically fused, historical review, (6) 216.
fused: experimental work, (6) 220; petrographic examination, types of crystals in, (6) 221; reversible reaction caused by furnace atmosphere (photo), (6) 228.
physical chemistry of, (6) 218.
**Magnesite,** specific gravity and chemical data (tabular), (6) 224; electrical resistivity (tabular data), (6) 228.
**Magnesium-bearing clay minerals,** nature of, (8) 278.
**Maximum bubble-pressure methods** of Jaeger and Parmelee and Harman for surface tension of glass, (6) 193.
for surface-tension measurements of glass, (10) 339.
**Maxwell stress law,** (3) 85; test for release of part of strain (tabular data), (3) 86.
**Mazzetti, C., and De Carli, F.,** equilibrium diagrams: $B_2O_3$–$Li_2O$, (4) 119; CdO–$B_2O_3$; and MnO–$B_2O_3$, (4) 120.
**McIntosh, A. B., Rait, J. R., and Hay, R.,** FeO–$Al_2O_3$, equilibrium diagram, (4) 119.
**McIntyre formula** for enamel reflectance *vs.* Kubelka-Munk theory, (1) 23.
**McMurdie, H. F.,** CaO–$Fe_2O_3$–$Al_2O_3$, equilibrium diagrams, (4) 132.
**McMurdie, H. F., and Insley, Herbert,** CaO–MgO–2CaO·$SiO_2$–5CaO·$3Al_2O_3$, equilibrium diagram, (4) 148.
**Melting diagrams,** list of, (4) 115.
**Metabentonite** in Ordovician strata, and volcanic origin of, map, (8) 280; chemical analysis, (8) 281.
**Metal surface,** nature of, (6) 211.
**Metallic particles** in fired ground coats, chemical test methods, (9) 307; methods for, (9) 308.
produced by gases, tests, (9) 303.
**Metallographic analysis** (tabular data), (2) 60.
**Metals,** alloy irons and steels for clay machinery parts, studies, (2) 69.
carbon and silicon in, effect on porcelain enamels, (1) 9; manganese, sulfur, and phorphorus in, effect, (1) 10.
cast iron, chemical analysis and metallographic tests, (2) 60.
cast iron, metallographic characteristics and enameling qualities, (1) 24.
castings, photomicrographs of structure, (1) 25–26.
for dry-pan screen plates, wear behavior; for muller tires, composition and wear-loss data, (2) 71; for die liners, chemical composition and wear-loss data, (2) 72.
iron, chemical composition, (1) 9.
mild steel: ingots, cross-section structure, (1) 11; and enameling iron (dilatation-temperature curves), (1) 13.
physical characteristics, (1) 12.
for porcelain enamels, characteristics of iron and steel, (1) 9.
sheet-iron, commercial, tests on gases evolved from, (9) 306.
warpage of, effect on porcelain enamels, (1) 14.
**Microphotometer records** of vitreous silica, cristobalite, and silica gel, X-ray diffraction patterns, (2) 51; for intensity curves of vitreous silica and cristobalite, (2) 52.
**Mill liquor,** $Na_2O$ titration for, (5) 185.
**Mobilometer,** Gardner, for consistency measurements, (5) 184–85.
**Molecular nature** of strain in glass, (3) 88.
**Montmorillonite,** chemical analyses, (8) 279; hydration and refractive index of (curves) (8) 285.
**Montmorillonite group** of clay minerals, origin and data, (8) 273; X-ray diffraction patterns, (8) 275.

**Morey, G. W., and Ingerson, Earl,** $CaO$–$B_2O_3$–$SiO_2$, equilibrium diagrams, (4) 142.
**Morey, G. W., and Merwin, H. E.,** $Na_2O$–$B_2O_3$–$B_2O_3$, equilibrium diagram, (4) 119.
**Muller tires,** composition and wear-loss data, (2) 71.
**Mullite,** fused: for refractories, production, (10) 360; noncrystalline, production, (10) 362.
photomicrographs: fused, (10) 363–64; and corundum, (10) 364: coarse crystals and coarse granular types, (10) 365.
raw materials for, (10) 304.

**Nacrite,** origin and description, (8) 268; Gruner's structural data, (8) 283.
**Nisioka, U.,** equilibrium diagrams: $CaO$–$Al_2O_3 \cdot 2SiO_2$–$CaO \cdot TiO_2$; and $CaO \cdot MgO$–$2SiO_2$–$CaO \cdot TiO_2$, (4) 129.
**Nomograph,** quadrant-chart type, application to clay slips, (3) 101; chart, (3) 102.
**Nontronite,** origin and data on, (8) 277.

**Ohio State University Engineering Experiment Station,** study of wear-resisting materials for clay machinery parts, (2) 69.
**Open-hearth furnaces.** See *Furnaces; Refractories.*
**Optical properties,** relation to chemical composition, (4) 114, (4) 115.
**Orton cones,** history, (2) 38.
**Orton, Edward, Jr.,** Memorial Lectures, (2) 37, (8) 267.
**Oxides,** tabular indexes: two oxides, (4) 157–60; three oxides, (4) 161–62; four and five oxides, (4) 163; oxides and fluorides, (4) 164.

**Palygorskites,** description of, (8) 278.
**Parmelee and Harman,** maximum bubble-pressure method for surface tension of glass, (6) 193.
**Parravano, N.,** $WO_3$–$Na_2WO_4$, equilibrium diagram, (4) 125.
**Particle size.** See also *Grain size.*
of clays, mathematical study, (10) 368.
of clays: measurement, (3) 89; literature review, (3) 90; curves, (3) 94–95; precision of results, (3) 96.
of flint fire clays, effect on base exchange capacity, (5) 182.
of milled enamels (tabular data), (9) 298.
time interval, speed and equivalent gravity settling (tabular data), (3) 92–93.
**Percolation method** for leaching clays, (5) 178.
**Periclase,** refractive index studies, (6) 223; specific gravity and chemical data, (6) 224; electrical resistivity (tabular data), (6) 228.
**Phase diagrams,** compilation, (4) 113–64; list for 1933, (4) 113–15; list in supplement, (4) 115; see also separate *Formula Index for Phase Diagrams.*
**Phase relations** in ternary system $K_2O$–$4SiO_2$–$Fe_2O_3$–$SiO_2$, (9) 320.
**Photoelastic constant** (stress-optical), definition, (1) 27; comparison of experimental values (curve), (1) 30.
**Photoelasticity,** strain as cause of; and theory, (1) 27.
**Photomicrographs,** alumina-silicate, fused, (10) 363.
brick in contact with cements; glazed surface, (10) 359.
Calif. magnesite, calcined, (6) 223, (6) 224.
checker brick, (2) 58–59; slabbed section, (2) 59.
clay-glass and feldspar-glass structure in heated clay materials, (11) 376, (11) 378, (11) 380, (11) 382.
clayware, laminated, (9) 328; sodium-carbonate treatment, no laminations, (9) 329.
coke-oven liners, slagged surface, (10) 357; columnar materials: dark-colored, (6) 219, light, (6) 220–21; crystalline, (6) 223.
cores of used and unused checker brick, (2) 58.
dickite crystals, (8) 270.
enamel frit drop shape on C in $N_2$ atmosphere, (6) 197; other sessile drop photos, (6) 200, (6) 206–207, (6) 209–11.
enameled castings, unetched sections, (2) 61–62; etched, (2) 62; unetched raw casting, (2) 63; etched, (2) 64–65.
flue edge of liner brick, cristobalite mass and tridymite area, (10) 358.
forsterite needles, (6) 222.
halloysite with shatter cracks, (8) 272.
**Photomicrographs** (*continued*)
iron particles reduced from ground-coat enamel by hydrogen, (9) 304.
kaolinite crystals, (8) 270, (8) 271.
magnesia (periclase) cubes; and magnesia and stalactite, (6) 217; magnesia, fused, (6) 225.
of metal castings after enameling, (1) 25–26.
monticellite, (6) 226.
montmorillonite, X-ray diffraction patterns, (8) 275.
mullite, fused, (10) 363; mullite crystals, coarse, (10) 365.
nickel globules reduced from ground-coat enamel by hydrogen, (9) 304.
quenched glaze specimens, (7) 240–42.
sessile drops, (6) 206, (6) 209–11.
sheet metals for porcelain enameling, (1) 10–15.
spherulites of synthetic beidellite, (8) 275.
stalactite cross-section, (6) 217; longitudinal section, (6) 218.
X-ray diffraction patterns: soda-boric oxide glass, (8) 288; soda-silica glass, (7) 260; vitreous silica and cristobalite, (2) 51.
X-ray patterns of N. C. pyrophyllite, (11) 391.
**Pickling** of iron, process, (9) 314.
**Pietenpol "soap-bubble" method** for surface tension of glass, (6) 193.
**Plastometer,** Bingham, modification, (2) 66.
**Platinum,** surface studies on, (6) 212.
**Polarization factor,** formulas for, (7) 261.
**Ponomarev, J.,** $BaF_2$–$KF$, equilibrium diagram, (4) 118.
**Porcelain Enamel Institute,** reports on standardization of tests, (1) 2.
**Porcelain enamels.** See *Enamels.*
**Porter formula** for surface tension of sessile drops, (10) 343.
**Potentiometer records,** automatic, strip-chart and circular-chart types, (2) 45; Photronic cell and temperature chart, (2) 48.
**Proximate carbonate method** and sulfate method for base-exchange studies, (5) 180; effect of sulfates, (5) 181.
**Pug-mill knives,** wear-resisting materials for, (2) 69; chemical composition, hardness, wear resistance, and heat-treatment data, (2) 70.
**Pushin, N. A., and Baskow, A. V.,** equilibrium diagrams: $AlF_3$–$KF$ and $AlF_3$–$LiF$, (4) 118; $CdF_2$–$NaF$, (4) 116; $PbF_2$–$NaF$, (4) 117.
**Pyrex-brand glass,** molecular nature of stress and strain in, studies on, (3) 86.
**Pyrochemical properties** of pyrophyllite, (11) 388.
**Pyrometers,** thermoelectric, diagram; total-radiation, (2) 43; diagram, (2) 44.
**"Pyrometric cone,"** definition and history, (2) 38.
**Pyrometric cone equivalent** of potash and soda feldspars and spodumene (tabular data), (11) 386.
**Pyrometric properties** of spodumene-feldspar mixtures, (11) 385.
**"Pyrometry,"** definition, (2) 37.
and steel-maker's refractories, relation of, (2) 37; pyrometric methods, (2) 42; of open-hearth roof, (2) 43; of regenerators, (2) 46; of open-hearth refractories, value, (2) 48.
**Pyrophyllite,** dielectric constant and strength tests; mechanical tests; specific gravity and porosity data, (9) 331.
in dinnerware bodies, composition, (6) 235.
for electrical insulator bodies; N. C. chemical analyses; properties, (9) 330.
N. C. types: pyrochemical properties, (11) 388; minerals in, X-ray tests, (11) 390; X-ray patterns, (11) 391; thermal curves, (11) 392.
and talc in semivitreous dinnerware bodies, (6) 229.

**Quadrant-chart,** type of nomograph, application to clay slips, (3) 101; chart, (3) 102.
**Quincke sessile-drop method,** (6) 193; Quincke approximation formula for sessile drop method, (6) 195; Quincke and Worthington, approximation formulas of, (6) 202.

**Radex,** specific gravity and chemical data on (6) 224.
**Radial distribution curves** for soda-boric oxide glass, (8) 289.
for soda-silica glass by Fourier analysis, (7) 259.
**Random-network theory** of glass, (2) 49.
**Reflectance** of acid-resistant enamels, comparison of, (1) 4.
methods: contrast-ratio, (1) 19; reflectivity, (1) 20; dual thickness, (1) 22.
*vs.* thickness of material, effect on vitreous enamels, (1) 16; definition of terms and Kubelka-Munk formula, (1) 18; apparatus for tests, (1) 19.
**Refractive indices** of $K_2O$–$Fe_2O_3$–$SiO_2$ (tabular data), (9) 323.
**Refractories,** "beta-alumina," linear thermal expansion, (10) 351.
brick, electrical resistivity (tabular data), (6) 228.
checker brick, alumina: nephelite deposits, (2) 56; thermal expansion curves, tabular data, (2) 57; effect of soda, (2) 59.
checker brick: alumina (photomicrographs), cores of used and unused brick, (2) 58–59; slabbed section, (2) 59; deterioration in glass tank (photographs), (2) 56.
checker brick: alumina-silica, from glass-tank regenerator, studies, (2) 55.
coke-oven liner, chemical analyses, (10) 356.
coke-oven liners, diagrams: location of samples for chemical analyses, (10) 356; thin sections, (10) 357; color photomicrograph for slagged surface, (10) 357.
coke-oven liners (photomicrographs): flue edges, (10) 358; brick in contact with cements; fayalite attack of brick below glaze, (10) 329.
coke-oven walls, failure by reaction with coal ash, (10) 354.
electrically fused magnesia, studies, (6) 216.
fused mullite, production data, (10) 360; effect of mullite properties, (10) 364.
in glass tanks, reactions, (2) 58.
open-hearth, pyrometry methods, (2) 48.
specific gravity and chemical data on raw materials, (6) 224.
super-duty fireclay brick for glass-tank regenerators, (2) 55.
temperature measurements, (2) 37, (2) 39.
**Refractory oxides,** thermal conductivity data, (6) 226; electrical conductivity and thermal expansion data, (6) 227.
**Regenerator pyrometry,** studies, (2) 46.
**Regenerators,** glass-tank, alumina-silica checker brick, studies, (2) 55.
**Research laboratories,** Karcite for laboratory sinks, (3) 108.
Ohio State Univ. Engineering Expt. Station, study of wear-resisting materials for clay machinery parts, (2) 69.
**Reusch, H. J., and Wartenberg, H. v.,** melting curves: $CaO$, with $Cu_2O$, $Al_2O_3$, $TiO_2$, and $SiO_2$, (4) 151; $CaO$ with $ThO_2$, $MgO$, $NiO$, and $CoO$, (4) 153; with $ZrO_2$, $BeO$, and $Mn_3O_4$, (4) 151.

**Salts,** inorganic, for pyrometric cones, behavior of salt compositions, (3) 98.
**Sandonnini, C.,** $PbO$–$PbF_2$, equilibrium diagram, (4) 117.
**Saponite,** origin and data, (8) 278; chemical analyses, (8) 279.
**Schairer, J. F., and Bowen, N. L.,** equilibrium diagrams: $CaAl_2Si_2O_8$–$KAlSi_2O_6$–$SiO_2$; and $CaMgSi_2O_6$–$KAlSi_2O_6$–$SiO_2$, (4) 145; $NaAlSiO_4$–$KAlSiO_4$–$SiO_2$, (4) 142–43.
**Screen test** *vs.* elutriation test for milled enamels (tabular data), (9) 301.
**Seger cones,** history, (2) 38.
**Semivitreous dinnerware bodies,** use of talc and pyrophyllite in, (6) 229.
**Semivitreous whiteware glaze,** body composition, (7) 239.
**Sessile drops,** method for surface tension and density of viscous liquids at high temperatures, (6) 193; formulas, (6) 194; Quincke approximation formulas, (6) 195; sessile-drop contact-angle measurements, (6) 206.
surface-tension tests, (10) 343; values obtained by, (10) 344.
**Sharples supercentrifuge method** for clay fractionation, (10) 367.
**Silica,** glassy, small-angle scattering study, (2) 53.
vitreous: and cristobalite, comparison of patterns, (2) 51; and cristobalite, intensity curves from microphotometer records, (2) 52; X-ray diffraction studies, results, (2) 53.

**Silica glass.** See *Glass.*
**Silica-oxygen hexagonal ring,** diagram, (8) 281; silica-oxygen chains, forms, (8) 282.
**Slags,** flow characteristics at high temperatures, correction on method, (6) 213.
**Slips,** clay, quadrant-chart type nomograph, (3) 101–102.
**"Soap-bubble" method** of Pietenpol, (6) 193.
**Soda** in regenerator chambers, effect, (2) 59.
**Soda-boric oxide glass.** See *Glass.*
**Soda-silica glass.** See *Glass, soda-silica.*
**Sodium carbonate treatment** of clays (tabular data), (9) 327.
**Sodium fluoride,** surface tension, density, and other data, (6) 203.
**Sodium silicate** on gold, surface-tension measurements, (6) 208; on platinum, (6) 209; photomicrographs, (6) 206–207.
sessile drop of, on carbon (photo), (6) 200.
surface tension, density, and other data, (6) 203.
**Soils,** base exchange of colloidal portions, (9) 325.
**Solubility,** total, and enamel consistency of $Na_2O:B_2O_3$, (5) 186.
**Spodumene,** chemical analysis, (5) 189; beneficiation, (5) 190.
**Spodumene-feldspar mixtures,** pyrometric properties, (11) 385; spodumene and feldspars, triaxial diagram and P.C.E. curves, (11) 387.
**Steatite** *vs.* pyrophyllite for electrical insulators, (9) 330.
**Steel manufacture,** refractories for, (2) 37.
**Stokes' law,** application to Andreasen pipette method, (11) 398–99.
**Strain** in glass, molecular nature, (3) 85, (3) 88.
**Supercentrifuge method** of Sharples for clay fractionation, (10) 367.
**Surface tension** of molten glasses, measurements, (10) 339; formula, (10) 339.
**Systems,** component, of phase-rule diagrams index, (4) 154; see also separate *Formula Index for Phase Diagrams.*

**Tabular indexes** to oxides in phase-rule diagrams, (4) 157–64.
**Tacchini, G.,** $MgF_2$–LiF, equilibrium diagram, (4) 116.
**Talc,** lime-free and lime-bearing, in dinnerware bodies, shrinkage curves, (6) 230; dry and fired modulus of rupture curves, (6) 231–32; absorption curves, (6) 233–34; moisture expansion curves, (6) 234–35; shrinkage curve, (6) 235.
and pyrophyllite, use in semivitreous dinnerware bodies, (6) 229.
**Temperature,** automatic control, (2) 44–46.
definition and discussion, (2) 37.
measuring cones independent of heating rate, (3) 98.
**Thermal conductivity.** See *Conductivity.*
**Thermal expansion** of alumina checker brick (tabular data and curves), (2) 57.
apparatus (photo), (6) 227.
**Thermoelectric pyrometer,** use, (2) 43; diagrams, (2) 45.
**Tilley, C. E.,** equilibrium diagrams: $Na_2Si_2O_5$–$NaAlSiO_4$, (4) 128; $Na_2SiO_3$–$Na_2Si_2O_5$–$NaAlSiO_4$, (4) 144.
**Tillotson drop-weight method** for surface tension of glasses, (6) 193.
**Titration curves** of dilute solutions of borax, sodium carbonate, and borax-sodium carbonate, (5) 185.
**Tridymite area** in flue edge of liner brick, (10) 358.
**Turbidimeter,** Wagner, for grain size of Portland cement, (11) 395.

**"Ultimate $p_H$,"** definition, (5) 166.

**Viscosity** and acid and base binding capacities in whiteware clays, (5) 165; "apparent," of clay suspensions, significance, (5) 168; of clay suspensions, cause of changes in, (5) 173.
**Viscous liquids,** surface tension and density at high temperatures, sessile-drop method for tests, (6) 193.
surface-tension studies, (10) 339; see also *Glass, surface-tension studies.*
**Vitreous enamels.** See *Enamels.*
**Voos, E.,** $CaO \cdot SiO_2$–$MnO \cdot SiO_2$, equilibrium diagram, (4) 126.

**Wagner turbidimeter** for grain size of Portland cement, (11) 395.
**Warpage** of metals for porcelain enameling, (1) 14.
**Wartenberg, H. v., and Eckhardt, K.,** melting curves: $CeO_2$, with $ZrO_2$, MgO, $Cr_2O_3$, CaO, BeO, $Al_2O_3$, $Fe_2O_3$, and $Mn_2O_3$, (4) 153; $La_2O_3$–MgO, (4) 152; $TiO_2$ and $ThO_2$, (4) 154; $ZrO_2$–$La_2O_3$, (4) 153.
**Wartenberg, H. v., and Reusch, H. J.,** melting curves: $Al_2O_3$ with $Mn_2O_3$, (4) 153; $ZrO_2$ and NiO, CoO, and $Mn_2O_3$, (4) 154.
**Wartenberg, H. v., Reusch, H. J., and Saran, E.,** melting curves: CaO with $ThO_2$, MgO, BeO, NiO, CoO, $Mn_2O_4$, and $Cu_2O$, (4) 152; CaO with $ZrO_2$, $Cr_2O_3$, $Al_2O_3$, $TiO_2$, $SiO_2$, and $Fe_2O_3$, (4) 152; BeO with
**Wartenberg, H. v., Reusch, H. J., and Saran, E.** (*continued*)
$ThO_2$, MgO, $ZrO_2$, $CeO_2$, CoO, $Cr_2O_3$, $La_2O_3$, $Al_2O_3$, NiO, CaO, $Fe_2O_3$, $Mn_2O_4$, and $Cu_2O$, (4) 159; $TiO_2$–BeO, (4) 151.
**Washburn, E. W., and Bunting, E. N.,** $Na_2O$–$TiO_2$, equilibrium diagram, (4) 121.
**Washburn and Libman,** hanging-cylinder method for surface tension of glass, (6) 193; surface-tension data, source of error in, (6) 204.
**Waste-heat drying.** See *Drying.*
**Water elutriator** for fineness test of milled enamels, (9) 297; photo, (9) 299.
**White, J., Howat, D. D., and Hay, R.,** MnO–$SiO_2$, equilibrium diagram, (4) 121.
**Whiteware,** glass phase and physical properties of, effect of rate of heating, (11) 371; preparation of specimens and test methods; raw materials for, chemical and body compositions (tabular data), (11) 372; heat treatments and physical properties of specimens (tabular data), (11) 374; semivitreous, microstructure studies, (11) 376, (11) 378, (11) 380.
**Whiteware bodies,** feldspathic: heat-treatment computation, (3) 75; heat-treatment data (curves), (3) 76; data on relation of vitrification range to RO content; data after heat treatments, (3) 77; heat-treatment chart, (3) 78.
**Whiteware clays.** See *Clays.*
**Whiteware glaze,** maturing data, (7) 239; see also *Glazes.*
**Wilner-Merck method** for metallic particles in fired ground coats, (9) 308.

**X-ray diffraction studies** for silica glass structure, (2) 49; X-ray diffraction patterns of vitreous silica, cristobalite, and dried commercial silica gel, comparison and microphotometer records, (2) 51.
on soda-boric oxide glass, (8) 287; X-ray intensity curves for soda-boric oxide glass (photomicrograph), (8) 288.
**X-ray patterns** of N. C. pyrophyllite, (11) 391.
**X-ray scattering curves** for soda-silica glass, Fourier analysis, (7) 259; X-ray diffraction patterns of soda-silica glass (photomicrographs), (7) 260.

**Zambonini, F.,** equilibrium diagram: $Bi_2(MoO_4)_3$–$PbMoO_4$; and $Bi_2(WO_4)_3$–$PbWO_4$, (4) 128.
**Zirnowa, N.,** $SiO_2$–$ZrO_2$, equilibrium diagram, (4) 122.

## FORMULA INDEX TO PHASE DIAGRAMS

The reference number in parentheses refers to the *monthly* issue of the *Journal;* the number following is the *page* number.

**Alumina,** $Al_2O_3$, "β-alumina," linear thermal expansion, (10) 351.
with BeO, melting curves, (4) 150; with $CeO_2$, (4) 151–52; with $CeO_2$, and with $Mn_2O_4$, (4) 153.
–CaO–$K_2O$, equilibrium diagram, (4) 130–31.
–CaO–$SiO_2$, equilibrium diagram, (10) 361.
–FeO, equilibrium diagram, (4) 119.
–$Fe_2O_3$–CaO–$SiO_2$, equilibrium diagram, (4) 147.
with $Li_2O$, $Na_2O$, CaO, or $K_2O$, and $SiO_2$, equilibrium diagram, (10) 362.
–MgO–$SiO_2$, equilibrium diagram, (10) 362.
–$SiO_2$, equilibrium diagram, (10) 361.
–$SiO_2$–FeO–$Fe_2O_3$, equilibrium diagram, (4) 148.
**Aluminum fluoride,** $AlF_3$.
–LiF, equilibrium diagram, (4) 118.
–$3KF \cdot AlF_3$ and $KF–3KF \cdot AlF_3$, equilibrium diagram, (4) 118.
–$3LiF \cdot AlF_3$ and $LiF–3LiF \cdot AlF_3$, equilibrium diagram, (4) 119.
–KF, equilibrium diagram, (4) 118.
**Arsenic pentoxide,** $As_2O_5$.
–PbO, equilibrium diagram, (4) 122.
–$K_3AsO_4$, equilibrium diagram, (4) 123.
–$Na_3AsO_4$, equilibrium diagram, (4) 123.

**Barium fluoride,** $BaF_2$.
–KF, equilibrium diagram, (4) 118.
**Beryllium oxide,** BeO, with CaO, melting curves, (4) 151–52; with $CeO_2$, (4) 153; with $ThO_2$, $ZrO_2$, $CeO_2$, CoO, $Cr_2O_3$, $La_2O_3$, $Al_2O_3$, NiO, CaO, $Fe_2O_4$, $Mn_2O_4$, and $Cu_2O$, (4) 150.
–$TiO_2$, melting curve, (4) 151.
**Bismuth molybdate,** $Bi_2(MoO_4)_3$.
–$PbMoO_4$, equilibrium diagram, (4) 128.
**Bismuth oxide, tri-,** $Bi_2O_3$.
–PbO, equilibrium diagram, (4) 121.
**Bismuth tungstate,** $Bi_2(WO_4)_3$.
–$PbWO_4$, equilibrium diagram, (4) 128.
**Boron oxide** (boric anhydride), $B_2O_3$.
–CdO, equilibrium diagram, (4) 120.
–CaO–$SiO_2$, equilibrium diagrams, (4) 138–42.
–PbO, equilibrium diagram, (4) 120.
–PbO ($PbO \cdot 2B_2O_3$–PbO), equilibrium diagram, (4) 121.
–$Li_2O$, equilibrium diagrams, (4) 119.
–MnO, equilibrium diagram, (4) 120.
–$Na_2O \cdot B_2O_3$, equilibrium diagram, (4) 119.

**Cadmium fluoride,** $CdF_2$.
–NaF, equilibrium diagram, (4) 116.
**Cadmium oxide,** CdO.
–$B_2O_3$, equilibrium diagram, (4) 120.
**Calcium aluminate,** $CaO \cdot Al_2O_3$.
–CaO–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$, equilibrium diagram, (4) 132.
**$5CaO \cdot 3Al_2O_3$.**
–CaO–$2CaO \cdot SiO_2$, equilibrium diagram, (4) 148.
–CaO–MgO–$2CaO \cdot SiO_2$, equilibrium diagram, (4) 148.
–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$–CaO–$2CaO \cdot SiO_2$, equilibrium diagram, (4) 146–47.
–$2CaO \cdot SiO_2$–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$, equilibrium diagram, (4) 146.
**$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$.**
–CaO–$CaO \cdot SiO_2$, equilibrium diagram, (4) 146.
–CaO–$2CaO \cdot SiO_2$, equilibrium diagrams, (4) 146.
**$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$** (*continued*)
–CaO–$2CaO \cdot SiO_2$–$5CaO \cdot 3Al_2O_3$, equilibrium diagram, (4) 146–47.
–CaO–$Al_2O_3$–CaO, equilibrium diagram, (4) 132.
–$5CaO \cdot 3Al_2O_3$–$2CaO \cdot SiO_2$, equilibrium diagram, (4) 146.
–$2CaO \cdot SiO_2$, equilibrium diagram, (4) 129.
**Calcium aluminum silicate,** $CaO \cdot Al_2O_3 \cdot 2SiO_2$.
–$CaO \cdot TiO_2$, equilibrium diagram, (4) 129.
–$CaO \cdot TiO_2$–$SiO_2$–$CaO \cdot SiO_2$, equilibrium diagram, (4) 145.
–$KAlSi_2O_6$–$SiO_2$, equilibrium diagram, (4) 145.
**Calcium fluoride** (fluorite), $CaF_2$.
–$CaSiO_3$, equilibrium diagram, (4) 123.
–$MgF_2$, equilibrium diagram, (4) 117.
–NaF, equilibrium diagram, (4) 116.
**Calcium magnesium silicate,** $CaO \cdot MgO \cdot 2SiO_2$.
–$CaO \cdot TiO_2$, equilibrium diagram, (4) 129.
–$KAlSi_2O_6$–$SiO_2$, equilibrium diagram, (4) 145.
**Calcium oxide** (lime), CaO with BeO, melting curves, (4) 150; with $CeO_2$, (4) 153; with $Cu_2O$, $Al_2O_3$, $TiO_2$, and $SiO_2$, (4) 151; with $TnO_2$, MgO, NiO, and CoO, (4) 153; with $ThO_2$, MgO, BeO, NiO, CoO, $Mn_2O_4$, and $Cu_2O$, (4) 152; with $ZrO_2$, BeO, and $Mn_2O_4$, (4) 151; with $ZrO_2$, $Cr_2O_3$, $Al_2O_3$, $TiO_2$, $SiO_2$, and $Fe_2O_3$, (4) 152.
–$Al_2O_3$–$SiO_2$, equilibrium diagram, (10) 361–62.
–$B_2O_3$–$SiO_2$, equilibrium diagrams, (4) 138–42.

**Calcium oxide** *(continued)*
–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$–$CaO \cdot Al_2O_3$, equilibrium diagram, (4) 132.
–$CaO \cdot SiO_2$–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$, equilibrium diagram, (4) 146.
–$2CaO \cdot SiO_2$–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$, equilibrium diagram, (4) 146.
–$2CaO \cdot SiO_2$–$5CaO \cdot 3Al_2O_3$, equilibrium diagram, (4) 148.
–$CaO \cdot SiO_2$–$5CaO \cdot 3Al_2O_3$–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$, equilibrium diagrams, (4) 146–47.
–FeO–$SiO_2$, equilibrium diagram, (4) 133, (4) 149–50; phase relations at 1285°C, (4) 133; at 1280°C, 1272°C, 1250°C, 1227°C, 1220°C, 1200°C, 1193°C, 1160°C, (4) 134; at 1130°C, 1105°C, 1097°C, 1093°C, 980°C, 700°C, (4) 135.
–MgO–$2CaO \cdot SiO_2$–$5CaO \cdot 3Al_2O_3$, equilibrium diagram, (4) 148.
–$K_2O$–$Al_2O_3$, equilibrium diagram, (4) 130–31.
–$SiO_2$–$Al_2O_3$–$Fe_2O_3$, equilibrium diagram, (4) 147.
**Calcium silicate, mono-,** $CaO \cdot SiO_2$.
–$CaF_2$, equilibrium diagram, (4) 123.
–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$–CaO, equilibrium diagram, (4) 146.
–$CaO \cdot Al_2O_3 \cdot 2SiO_2$–$CaO \cdot TiO_2 \cdot SiO_2$, equilibrium diagram, (4) 145.
–MnO–$SiO_2$, equilibrium diagram, (4) 126.
–$TiO_2$, equilibrium diagram, (4) 125.
**Calcium silicate, di-,** $2CaO \cdot SiO_2$.
–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$, equilibrium diagram, (4) 129.
–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$–CaO, equilibrium diagram, (4) 146.
–$4CaO \cdot Al_2O_3 \cdot Fe_2O_3$–$5CaO \cdot 3Al_2O_3$, equilibrium diagram, (4) 146.
–$5CaO \cdot 3Al_2O_3$–CaO, equilibrium diagram, (4) 148.
–$5CaO \cdot 3Al_2O_3$–CaO–MgO, equilibrium diagram, (4) 148.
–$5CaO \cdot 3Al_2O_3 \cdot 4CaO \cdot Al_2O_3 \cdot Fe_2O_3$–CaO, equilibrium diagram, (4) 146–47.
**Calcium titanate,** $CaO \cdot TiO_2$.
–$CaO \cdot Al_2O_3 \cdot 2SiO_2$, equilibrium diagram, (4) 129.
–$CaO \cdot MgO \cdot 2SiO_2$, equilibrium diagram, (4) 129.
–$SiO_2$, equilibrium diagram, (4) 125.
**$CaO \cdot TiO_2 \cdot SiO_2$.**
–$CaO \cdot SiO_2$–$CaO \cdot Al_2O_3 \cdot 2SiO_2$, equilibrium diagram, (4) 145.
–$MnO \cdot TiO_2$, equilibrium diagram, (4) 130.
**Ceric oxide,** $CeO_2$ with BeO, melting curves, (4) 150; with $ZrO_2$, MgO, $Cr_2O_3$, CaO, BeO, $Al_2O_3$, $Fe_2O_3$, and $Mn_2O_4$, (4) 153.
**Chromic oxide,** $Cr_2O_3$ with BeO, melting curves, (4) 150; with CaO, (4) 152; with $CeO_2$, (4) 153.
**Cobaltous oxide,** CoO with BeO, melting curves, (4) 150; with CaO, (4) 152–53; with CoO and $ZrO_2$, (4) 154.
**Cuprous oxide,** $Cu_2O$ with BeO, melting curves, (4) 150; with CaO, (4) 151–52.

**Ferrous oxide,** FeO.
–$Al_2O_3$, equilibrium diagram, (4) 119.
–CaO–$SiO_2$, equilibrium diagram, (4) 133, (4) 149–50.
–$Fe_2O_3$–$Al_2O_3$–$SiO_2$, equilibrium diagram, (4) 148.
–$Fe_2O_3$–$SiO_2$, equilibrium diagram, (2) 42, (4) 142.
–MgO, equilibrium diagram, (4) 117, (4) 149.
–MgO–$SiO_2$, equilibrium diagrams, (4) 136, (4) 149; phase relations at 1550°C and 1527°C, (4) 136; at 1450°C, 1305°C, 1250°C, 1150°C, 1050°C, and 955°C, (4) 137.
–MnO–$SiO_2$, equilibrium diagram, (4) 138.
–$SiO_2$, equilibrium diagram, (2) 41, (10) 356.
–$SiO_2$–CaO, phase relations at 1185°C, (4) 133; at 1280°C, 1272°C, 1250°C, 1227°C, 1220°C, 1200°C, 1193°C, 1160°C, (4) 134; at 1130°C, 1105°C, 1097°C, 1093°C, 980°C, 700°C, (4) 135.
–$NaAlSiO_4$–$SiO_2$, equilibrium diagram, (4) 143.
**Ferrous silicate,** $FeSiO_3$.
–$MgSiO_3$, equilibrium diagram, (4) 149.
**Ferrous silicate, di-** (fayalite), $2FeO \cdot SiO_2$.
–$Mg_2SiO_4$, equilibrium diagram, (4) 126, (4) 149.
–$NaAlSi_2O_6$, equilibrium diagram, (4) 129.
**Ferric oxide,** $Fe_2O_3$ with CaO, melting curve, (4) 152; $Fe_2O_3$ content of liquid MgO, $SiO_2$, FeO in equilibrium with metallic iron, (4) 135; relation between refractive index and iron content of glasses in, (4) 149.
–$Al_2O_3$–$SiO_2$–FeO, equilibrium diagram, (4) 148.

**Ferric oxide** *(continued)*
–CaO–$SiO_2$–$Al_2O_3$, equilibrium diagram, (4) 147.
–FeO–$SiO_2$, equilibrium diagram, (4) 142.
–$O_2$–$Fe_3O_4$, equilibrium diagram, (4) 132.
–$K_2O$–$SiO_2$, equilibrium diagram, (9) 322.
–$K_2O \cdot Al_2O_3 \cdot 6SiO_2$, equilibrium diagram, (4) 144.
–$SiO_2$–$K_2O \cdot 4SiO_2$, refractive indices of some glasses in, (9) 320.
**$Fe_3O_4$** (ferroso-ferric oxide (magnetite or magnetic oxide)), with BeO, melting curve, (4) 150; with $CeO_2$, (4) 153.
–$Fe_2O_3$–$O_2$, equilibrium diagram, (4) 132.

**Iron, Fe.**
–Mg olivines and Fe–Mg pyroxenes, equilibrium diagrams, (4) 149.
–O, equilibrium diagram, (10) 357.

**Lanthanum sesquioxide,** $La_2O_3$ with BeO, melting curve, (4) 150.
–MgO, melting curve, (4) 152.
–$ZrO_2$, melting curve, (4) 153.
**Lead arsenate,** $Pb_3(AsO_4)_2$.
–$PbF_2$, equilibrium diagram, (4) 123.
**Lead chromate,** $PbCrO_4$.
–PbO, equilibrium diagram, (4) 125.
–$PbSO_4$, equilibrium diagram, (4) 128.
**Lead fluoride,** $PbF_2$.
–$Pb_3(AsO_4)_2$, equilibrium diagram, (4) 123.
–PbO, equilibrium diagram, (4) 117.
–$Pb_3(VO_4)_2$, equilibrium diagram, (4) 124.
–NaF, equilibrium diagram, (4) 117.
**Lead molybdate,** $PbMoO_4$.
–$Bi_2(MoO_4)_3$, equilibrium diagram, (4) 128.
–PbO, equilibrium diagram, (4) 125.
–$PbWO_4$, equilibrium diagram, (4) 128.
**Lead oxide,** PbO.
–$As_2O_3$, equilibrium diagram, (4) 122.
–$Bi_2O_3$, equilibrium diagram, (4) 121.
–$B_2O_3$, equilibrium diagram, (4) 120.
–$B_2O_3$ ($PbO \cdot 2B_2O_3$–PbO), equilibrium diagram, (4) 121.
–$PbCrO_4$, equilibrium diagram, (4) 125.
–$PbF_2$, equilibrium diagram, (4) 117.
–$PbMoO_4$, equilibrium diagram, (4) 125.
–$PbWO_4$, equilibrium diagram, (4) 126.
–$K_2O$–$SiO_2$, equilibrium diagram, (4) 130, (4) 132.
–$V_2O_5$, equilibrium diagram, (4) 122.
**Lead sulfate,** $PbSO_4$.
–$PbCrO_4$, equilibrium diagram, (4) 128.
**Lead tungstate,** $PbWO_4$.
–$Bi_2(WO_4)_3$, equilibrium diagram, (4) 128.
–$PbMoO_4$, equilibrium diagram, (4) 128.
–PbO, equilibrium diagrams, (4) 126.
**Lead vanadate, ortho-,** $Pb_3(VO_4)_2$.
–$PbF_2$, equilibrium diagram, (4) 124.
**Lithium aluminum fluoride,** $3LiF \cdot AlF_3$.
–$AlF_3$ and $LiF$–$3LiF \cdot AlF_3$, equilibrium diagram, (4) 119.
**Lithium fluoride,** LiF.
–$AlF_3$, equilibrium diagram, (4) 118.
–$3LiF \cdot AlF_3$ and $3LiF \cdot AlF_3$–$AlF_3$, equilibrium diagram, (4) 119.
–$MgF_2$, equilibrium diagram, (4) 116.
**Lithium oxide,** $Li_2O$.
–$B_2O_3$, equilibrium diagram, (4) 119.
$Na_2O$, CaO, or $K_2O$, with $Al_2O_3$ and $SiO_2$, equilibrium diagram, (10) 362.
**Lithium sulfate,** $Li_2SO_4$.
–$MgSO_4$, melting-point data, (3) 99.

**Magnesium,** Mg.
–Fe olivines and Mg–Fe pyroxenes, equilibrium diagrams, (4) 149.
**Magnesium fluoride (sellaite),** $MgF_2$.
–$CaF_2$, equilibrium diagram, (4) 117.
–LiF, equilibrium diagram, (4) 116.
**Magnesium oxide** (periclase; magnesia), MgO, with BeO, melting curve, (4) 150; with CaO, (4) 152–53; with $CeO_2$, (4) 153.
–$Al_2O_3$–$SiO_2$, equilibrium diagram, (10) 362.
–$2CaO \cdot SiO_2$–$5CaO \cdot 3Al_2O_3$–CaO, equilibrium diagram, (4) 148.
–FeO, equilibrium diagram, (4) 117, (4) 149.
–FeO–$SiO_2$, equilibrium diagram, (4) 136, (4) 149; phase relations at 1550°C and 1527°C, (4) 136; at 1450°C, 1305°C, 1250°C, 1150°C, 1050°C, and 955°C, (4) 137.
–$La_2O_3$, melting curve, (4) 152.
–$ZrO_2$, equilibrium diagram, (4) 122.
**Magnesium silicate** (enstatite), $MgSiO_3$.
–$FeSiO_3$, equilibrium diagram, (4) 149.
**Magnesium silicate, di-** (forsterite), $Mg_2SiO_4$.
–$Fe_2SiO_4$, equilibrium diagram, (4) 126, (4) 149.
**Magnesium sulfate,** $MgSO_4$.
–$Li_2SO_4$, melting-point data, (3) 99.

**Manganese silicate** (hermannite, rhodonite), $MnO \cdot SiO_2$.
–CaO–$SiO_2$, equilibrium diagram, (4) 126.
**Manganese titanate, meta-,** $MnO \cdot TiO_2$.
–$CaO \cdot TiO_2$–$SiO_2$, equilibrium diagram, (4) 130.
**Manganous-manganic oxide** (hausmannite), $Mn_3O_4$, with $Al_2O_3$, melting curves, (4) 153; with BeO, (4) 150; with CaO, (4) 151–52; with $CeO_2$, (4) 153; with $ZrO_2$, (4) 154.
**Manganous oxide** (manganosite) MnO.
–$B_2O_3$, equilibrium diagram, (4) 120.
–FeO–$SiO_2$, equilibrium diagram, (4) 138.
–$SiO_2$, equilibrium diagram, (4) 121.
**Molybdenum trioxide** (molybdite), $MoO_3$.
–$K_2MoO_4$, equilibrium diagram, (4) 124.
–$Na_2MoO_4$, equilibrium diagram, (4) 124.

**Nickel monoxide** (bunsenite), NiO with BeO, melting curve, (4) 150; with CaO, (4) 152–53; with $ZrO_2$, (4) 154.

**Oxygen, O.**
–Fe, equilibrium diagram, (10) 357.
–$Fe_2O_3$–$Fe_3O_4$, equilibrium diagram, (4) 132.

**Potassium aluminum fluoride,** $3KF \cdot AlF_3$.
–$AlF_3$ and $KF$–$3KF \cdot AlF_3$, equilibrium diagram, (4) 118.
**Potassium aluminum silicate,** $KAlSiO_4$.
–$NaAlSiO_4$–$SiO_2$, equilibrium diagram, (4) 142–43.
**Potassium aluminum silicate (orthoclase),** $K_2O \cdot Al_2O_3 \cdot 6SiO_2$.
–$Fe_2O_3$, equilibrium diagram, (4) 144.
**Potassium arsenate, ortho-,** $K_3AsO_4$.
–$As_2O_5$, equilibrium diagram, (4) 123.
**Potassium arsenate, pyro-,** $K_4As_2O_7$.
–$Na_4As_2O_7$, equilibrium diagrams, (4) 127.
**Potassium borate, meta-,** $KBO_2$.
–$NaBO_2$, equilibrium diagram, (4) 126.
**Potassium chromate,** $K_2CrO_4$.
–$Na_2CrO_4$, equilibrium diagram, (4) 127.
**Potassium fluoride,** KF.
–$AlF_3$, equilibrium diagram, (4) 118.
–$BaF_2$, equilibrium diagram, (4) 118.
–$3KF \cdot AlF_3$ and $3KF \cdot AlF_3$–$AlF_3$, equilibrium diagram, (4) 118.
–NaF, equilibrium diagram, (4) 116.
**Potassium molybdate,** $K_2MoO_4$.
–$MoO_3$, equilibrium diagram, (4) 124.
–$Na_2MoO_4$, equilibrium diagram (4) 127.
**Potassium oxide,** $K_2O$.
–$Al_2O_3$–CaO, equilibrium diagram, (4) 130–31.
–$Fe_2O_3$–$SiO_2$, equilibrium diagram, (9) 322.
–PbO–$SiO_2$, equilibrium diagram, (4) 130, (4) 132.
**Potassium silicate,** $K_2O \cdot 4SiO_2$.
–$Fe_2O_3$–$SiO_2$ system, refractive indices of some glasses in, (9) 320.
–$CaAl_2Si_2O_8$–$SiO_2$, equilibrium diagram, (4) 145.
–$CaMgSi_2O_6$–$SiO_2$, equilibrium diagram, (4) 145.
**Potassium sulfate** (arcanite), $K_2SO_4$.
–KBr, melting-point data, (3) 99–100.
**Potassium tungstate,** $K_2WO_4$.
–$Na_2WO_4$, equilibrium diagram, (4) 127.
–$WO_3$, equilibrium diagram, (4) 124.

**Sodium aluminum silicate** (albite), $NaAlSi_3O_8$.
–$Fe_2SiO_4$, equilibrium diagram, (4) 129.
**Sodium aluminum silicate (sodium nephelite),** $NaAlSiO_4$.
–FeO–$SiO_2$, equilibrium diagram, (4) 143.
–$KAlSiO_4$–$SiO_2$, equilibrium diagram, (4) 142–43.
–$Na_2SiO_3$–$Na_2Si_2O_5$, equilibrium diagram, (4) 144.
–$Na_2Si_2O_5$, equilibrium diagram, (4) 128.
**Sodium arsenate, ortho-,** $Na_3AsO_4$.
–$As_2O_5$, equilibrium diagram, (4) 123.
**Sodium arsenate, pyro-,** $Na_4As_2O_7$.
–$K_4As_2O_7$, equilibrium diagram, (4) 127.
**Sodium borate, meta-,** $NaBO_2$.
–$B_2O_3$, equilibrium diagram, (4) 119.
–$KBO_2$, equilibrium diagram, (4) 126.
**Sodium chromate,** $Na_2CrO_4$.
–$K_2CrO_4$, equilibrium diagram, (4) 127.
**Sodium fluoride** (villiaumite), NaF.
–$CdF_2$, equilibrium diagram, (4) 116.
–$CaF_2$, equilibrium diagram, (4) 116.
–$PbF_2$, equilibrium diagram, (4) 117.
–KF, equilibrium diagram, (4) 116.
–$Na_2SiO_3$, equilibrium diagram, (4) 123.
**Sodium molybdate,** $Na_2MoO_4$.
–$MoO_3$, equilibrium diagram, (4) 124.
–$K_2MoO_4$, equilibrium diagram, (4) 127.
–$Na_2WO_4$, equilibrium diagram, (4) 128.
**Sodium oxide,** $Na_2O$.
–$TiO_2$, equilibrium diagram, (4) 121.

**Sodium silicate, di-,** $Na_2Si_2O_5$.
–$NaAlSiO_4$, equilibrium diagram, (4) 128.
–$NaAlSiO_4$–$Na_2SiO_3$, equilibrium diagram, (4) 144.
**Sodium silicate, meta-,** $Na_2SiO_3$.
–NaF, equilibrium diagram, (4) 123.
–$Na_2Si_2O_5$–$NaAlSiO_4$, equilibrium diagram, (4) 144.
**Sodium sulfate,** $Na_2SO_4$.
–NaBr, melting-point data, (3) 100.
**Sodium tungstate,** $Na_2WO_4$.
–$K_2WO_4$, equilibrium diagram, (4) 127.
–$Na_2MoO_4$, equilibrium diagram, (4) 128.
**Sodium tungstate** (*continued*)
–$WO_3$, equilibrium diagram, (4) 125.
**Thorium dioxide (thorianite),** $ThO_2$ with BeO, melting curve, (4) 150; with CaO, (4) 152–53; with $TiO_2$, (4) 154.
**Titanium dioxide (rutile),** $TiO_2$.
with BeO, melting curve, (4) 151; with CaO, (4) 151–52.
–$CaO \cdot SiO_2$, equilibrium diagram, (4) 125.
–$Na_2O$, equilibrium diagram, (4) 121.
and $ThO_2$, melting curve, (4) 154.
**Tungsten trioxide,** $WO_3$.
**Tungsten trioxide** (*continued*)
–$K_2WO_4$, equilibrium diagram, (4) 124.
–$Na_2WO_4$, equilibrium diagram, (4) 125.
**Vanadium pentoxide,** $V_2O_5$.
–PbO, equilibrium diagram, (4) 122.
**Zirconium dioxide,** $ZrO_2$ with BeO, melting curve, (4) 150; with CaO, (4) 151–52; with CeO, (4) 153; with NiO, CoO, and $Mn_3O_4$, (4) 154.
–$La_2O_3$, melting curve, (4) 153.
–MgO, equilibrium diagram, (4) 122.
–$SiO_2$, equilibrium diagrams, (4) 122.

---

# FOOTNOTE CITATIONS INDEX TO THE JOURNAL

## Volume 21, 1938

The reference number in parentheses refers to the *monthly* issue of the *Journal;* the number following is the *page* number.

**Adam, N. K.,** physics and chemistry of surfaces, (6) 194, (6) 206.
**Allen, V. T.,** mineral composition and origin of Mo. flint and diaspore clays, (8) 272; Ordovician altered volcanic material in Iowa, Wis., and Mo., (8) 280.
**Ambronn, H.,** accidental double refraction, (1) 27.
**American Ceramic Society Enamel Division Standards Report,** 1936, (1) 2.
**American Ceramic Society Standards Report,** thermal expansion apparatus, (6) 224.
**American Society for Metals,** Metals Handbook, (2) 61.
**American Society for Testing Materials,** manual for interpretation of refractory test data, (11) 381; manual on presentation of data, (11) 381.
**Andersen, Olaf,** system anorthite–forsterite–silica, (6) 217.
**Andreasen, A. H. M.,** determination of degree of fineness, (3) 90; validity of Stokes' law for nonspherical particles, (3) 97, (11) 390.
**Andrews, A. I.,** acid-resisting cover enamels for sheet iron, (1) 2; development of acid-resisting white sheet-iron enamels, (1) 2; enamels, (1) 2, (5) 184.
**Ashley, H. E., and Emley, W. E.,** errors in determining sizes of grains of minerals and use of surface factors, (3) 91.
**Austin, J. B.,** thermal expansion of some refractory oxides, (6) 226, (10) 352.

**Badger, A. E., Parmelee, C. W., and Williams, A. E.,** surface tension of molten glass, (10) 339.
**Bailey, E. H.,** effect of air drying on hydrogen-ion concentration of soils of U. S. and Canada, (5) 167.
**Bailey, James, and Sharp, D. E.,** release of strain in glass, (3) 89.
**Bair, G. J.,** constitution of lead oxide-silica glasses: I–II, (6) 198.
**Bakker, G.,** handbook of experimental physics, (6) 206.
**Banerjee, K. R.,** theory of photoelasticity, (1) 27.
**Barrett, E. P.,** furnace for measurement of coal-ash softening temperature, (6) 196.
**Barrett, E. P., and Taylor, J. A.,** new method for studying flow characteristics of glasses and slags at elevated temperatures, (6) 196, (6) 206, (6) 213, (7) 252.
**Bartell, F. E., Culbertson, J. L., and Miller, M. A.,** alteration of free surface energy of solids: I, vertical rod method for measurement of contact angles and preliminary study of effect of heat treatment on magnitude of contact angle, (6) 210.
**Bartell, F. E., and Miller, M. A.,** II, effect of heat treatment of metals in air, (6) 210; III, effect of, in vacuum and in several gases, (6) 210.
**Bartell, F. E., and Wooley, A. D.,** solid-liquid-air contact angles and their dependence on surface condition of solid, (6) 210.
**Bartell, F. E., and Zuidema, H. H.,** wetting characteristics of solids of low surface tension, such as talc, wax, and resins, (6) 196, (6) 206.
**Bashforth, F., and Adams, J. C.,** attempt to test theories of capillarity, (6) 194.
**Baver, L. D.,** effect of amount and nature of exchangeable cations on structure of a colloidal clay, (5) 166.
**Bayley, W. S.,** high-grade clays of eastern U. S., (8) 271; kaolin in N. C., with brief note on hydromica, (8) 279.
**Beliankin, D. S., and Vinogradova, A. M.,** physicochemical properties of pyrophyllite, (11) 389.
**Bendicks, Carl, and Lofquist, Helge,** nonmetallic inclusions in iron and steel, (2) 61.
**Benrubi, J. H.,** fit of bodies and glazes, (7) 248.
**Berthier, P.,** analyse d'halloysite, (8) 272.
**Bingham, E. C.,** Bingham plastometer, (2) 66.
**Blair, A. A.,** chemical analysis of iron, (9) 308.
**Bleininger, A. V.,** solubility of fired bodies in hot sulfuric acid, (11) 381.
**Bonine, C. A.,** recent work on bentonite, (8) 275.
**Booze, M. C., and Flint, F. C.,** checker brick for resisting alkaline slags, (2) 55.
**Bouyoucos, G. J.,** hydrometer as a new and rapid method for determining colloidal content of soils, (11) 394; hydrometer method for mechanical analysis of soils, (11) 394; hydrometer method in study of soils, (3) 90.
**Bowen, N. L., and Schairer, J. F.,** system FeO, (2) 40; system FeO–$SiO_2$, (9) 323, (10) 357.
**Bowen, N. L., Schairer, J. F., and Willems, H. W. v.,** ternary system $Na_2SiO_3$–$Fe_2O_3$–$SiO_2$, (9) 323.
**Bradfield, Richard,** concentration of cations in clay sols, (5) 167.
**Bradley, W. F., Grim, R. E., and Clarke, G. L.,** study of behavior of montmorillonite upon wetting, (8) 273.
**Bragg, W. H., and Bragg, W. L.,** the crystalline state, (2) 52.
**Bragg, W. L.,** atomic structure of minerals, (7) 263, (8) 281.
**Bramlette, M. N., and Posnjak, E.,** zeolitic alteration of pyroclastics, (8) 276.
**Brammall, A.,** reconstitution processes in shales, slates, and phyllites, (8) 279.
**Bray, R. H.,** significance of particle size within clay fraction, (3) 97, (11) 394.
**Bray, R. H., Grim, R. E., and Kerr, P. F.,** application of clay mineral technique to Ill. clay and shale, (5) 166, (8) 280, (10) 367.
**Bray, R. H., and Willhite, F. M.,** determination of total replaceable bases in soils, (5) 180.
**Breithaupt, A.,** vollständige charakteristik des mineral-systems, (6) 268.
**Brush and Dana,** "beta-spodumene," (5) 190.
**Bucher, W. H.,** Logan's explanation of origin of Indiana's kaolin, (8) 273.
**Budnikoff, P. P., and Pines, B. J.,** constituents and properties of "radex" magnesite brick, (6) 224.
**Burgess, P. S., and Breazeale, J. F.,** methods for determining exchangeable bases of soils, either in presence or absence of alkali salts, (5) 181.
**Büssem, Wilhelm,** thermal expansion measurements of crystalline bodies by X-ray method: I, (6) 225.

**Caron,** magnesia for crucibles and refractory brick, (6) 216.
**Casagrande, A.,** hydrometer method for determination of fineness distribution of soils, (3) 90.
**Cayeux, L.,** introduction a l'étude petrographique des roches sédimentaires, (8) 276.
**Channon, H. J., Renwick, F. F., and Storr, B. V.,** behavior of scattering media in fully diffused light, (1) 16.
**Cheesbrough, E. W.,** estimation of $Fe_2O_3$ and $Fe_3O_4$ in presence of Fe and FeO, (9) 308.
**Clark, N. A., and Collins, E. R.,** equilibrium between soil and electrolytes, and its influence upon some lime requirement methods, (5) 168.
**Cohn, W. M.,** viscosity measurements of feldspar melts at high temperatures, (11) 382.
**Compton, A. H., and Allison, S. K.,** X-rays in theory and experiment, (7) 261.
**Cooke, R. D.,** controlling consistency of enamel slips, (2) 67; laboratory control in dry-process enameling, (9) 316; plastic properties of enamel slips, (2) 66.
**Cooke, S. R. B.,** short-column hydraulic elutriator for subsieve sizes, (10) 367.
**Correns, C. W.,** petrography of clays, (8) 272.
**Correns, C. W., and Schlünz, F. K.,** origin of hydromica, (8) 280.
**Cousen, A., and Turner, W. E. S.,** study of glasses boric oxide-silica, (8) 292.
**Crawford, A. L., and Cowles, H. O.,** fullers' earth deposit near Aurora, Utah, (8) 276.
**Cross, Whitman, and Hillebrand, W. F.,** minerals from neighborhood of Pike's Peak, Colo., (8) 268.

**Dalton, R. H.,** extraction and analysis of gases from glass, (6) 196.
**Dammer, B., and Tietze, O.,** nutzbaren mineralien, (11) 389.
**Damour and Salvetat,** notice and analyses of hydrosilicate of aluminum at Montmorillon, (8) 274.
**Dana, E. S.,** system of mineralogy, (8) 276.
**Davies, R. J., Green, R. A., and Donnelly, H. F. E.,** some researches on china clay, (3) 90.
**Denison, I. A.,** methods for determining total acidity of soils, (5) 168.
**Denison, I. A., Fry, W. H., and Gile, P. L.,** alteration of muscovite and biotite in soil, (8) 279.
**Dick, A. B.,** kaolinite, (8) 269; supplementary notes on the mineral kaolinite, (8) 269.
**Dittler, E., and Hibsch, J. E.,** anauxite und cimolite von Bilin, (8) 270.
**Dobbins, J. T., and Byrd, R. M.,** volumetric method for determining sodium, (5) 180.
**Doelter, C.,** handbuch der mineralchemie, (11) 389.
**Donald, W.,** magnesite and magnesite brick, (6) 216.
**Donnan, F. G.,** theory of membrane equilibria, (5) 174.
**Donnan, F. G., and Harris, A. B.,** osmotic pressure and conductivity of aqueous solutions of congo-red and reversible membrane equilibria, (5) 174.
**Dorsey, N. E.,** new equation for determining surface tension from form of a sessile drop or bubble, (6) 195, (6) 205, (7) 252.

**Edelman, C. H.,** relations between the crystal structure of minerals and their base-exchange capacity, (8) 283.

**Eitel, W., Pirani, Marcello, and Scheel Karl** (editors, Glastechnische Tabellen), (6) 194.

**Ekblaw, G. E., and Grim, R. E.,** geological relations between constitution of soil materials and highway construction, (8) 277.

**Ellefson, B. S., and Taylor, N. W.,** surface properties of fused salts and glasses: I, sessile-drop method for determining surface tension and density of viscous liquids at high temperatures, (7) 252.

**Emery, A. H., and Stoddard, B. H.,** talc and ground soapstone, (11) 388.

**Endell, K., Fendius, H., and Hofmann, U.,** base exchangeability of clays and forming problems in ceramics, (5) 174.

**Endell, K., Hofmann, U., and Maegdefrau, E.,** natur des tonanteils in rohstoffen der deutschen zement-industrie, (8) 279.

**Endell, K., Hofmann, U., and Wilm, D.,** nature of ceramic clays, (5) 176.

**Englehart, W. von,** silicatische tonminerale, (8) 278.

**English, S.,** effect of various constituents on viscosity of glass near its annealing temperature, (10) 345.

**English, S., and Turner, W. E. S.,** physical properties of boric-oxide containing glasses and their bearing on general problem of constitution of glass, (8) 292; study of casing of colorless by cobalt blue glass: II, question of setting rate, (10) 345.

**Euken, A.,** thermal conductivity of ceramic refractory materials; its calculation from thermal conductivity of constituents, (6) 226.

**Ewell, R. H., Bunting, E. N., and Geller, R. F.,** thermal decomposition of talc, (11) 392.

**Fajans, K., and Joos, G.,** ionic molecular refraction, (1) 29.

**Faust, G. T.,** fusion relations of iron-orthoclase with discussion of evidence for existence of iron-orthoclase molecule in feldspars, (9) 320.

**Ferguson, A.,** reports on progress in physics, (6) 195; surface tensions of liquids in contact with different gases, (6) 195; theoretical shape of large bubbles and drops with other allied problems, (6) 195.

**Ferguson, J. B.,** note on sintering of magnesia, (6) 216.

**Ferguson, J. B., and Merwin, H. E.,** ternary system $CaO$–$MgO$–$SiO_2$, (6) 217.

**Fersman, A.,** palygorskitgruppe, (8) 278.

**Fisk, H. G., and McCaughey, W. J.,** equilibrium studies in systems containing magnesium oxide, iron oxide, and magnesium aluminate, (6) 218.

**Foshag, W. F.,** identity of newtonite with alunite, (8) 268.

**Foshag, W. F., and Woodford, A. O.,** bentonitic magnesium clay mineral from Calif., (8) 278, (8) 279.

**Fraas, F., and Ralston, O. C.,** beneficiation of spodumene by decrepitation, (5) 190, (11) 385.

**Fulcher, G. S.,** analysis of recent measurements of viscosity of glass, (10) 348.

**Galpin, S. L.,** studies of flint clays and their associates, (8) 279.

**Gautsch, M. D.,** Enamel Div. Standards Comm. Report, (1) 2.

**Geller, R. F., and Creamer, A. S.,** investigation of feldspar and its effect in pottery bodies, (11) 371.

**Geller, R. F., Evans, D. N., and Creamer, A. S.,** effects of particle size of a potter's "flint" and a feldspar in whiteware, (11) 383.

**Gooding, E. J., and Turner, W. E. S.,** study of series of glasses containing sodium oxide, boric oxide, and silica, (8) 291.

**Goodwin and Mailey,** properties of fused magnesium oxide, (6) 227.

**Gould, R. E., and Hedquist, A. J.,** experimental electrical firing of true porcelain and china-type bodies made from American materials for determination of suitable schedules, VII, (11) 371.

**Graham, R. P. D.,** sapouite from Canadian Northern Railway tunnel, Montreal, (8) 278, (8) 279.

**Greaves-Walker, A. F., and Owens, C. W., Jr.,** expansion of pyrophyllite, (11) 389.

**Greaves-Walker, A. F., Owens, C. W., Jr., Hurst, T. L., and Stone, R. L.,** development of pyrophyllite refractories and refractory cements, (11) 388.

**Greig, J. W.,** temperature of approximate binary immiscibility, (2) 41.

**Griffith, A. A.,** phenomena of flow and rupture in solids, (6) 193, (10) 333.

**Grim, R. E.,** petrography of fullers' earth deposits, Olmstead, Ill., with a brief study of some non-Illinois earths, (8) 276; petrology of Pa. shales and noncalcareous underclays associated with Ill. coals, (8) 280.

**Grim, R. E., Bray, R. H., and Bradley, W. F.,** constitution of bond clays and its influence on bonding properties, (5) 176; mica in argillaceous sediments, (8) 280.

**Grohskopf, J. G., and Hundhausen, M.,** occurrence of dickite and fluorite in Cambrian and Ordovician of Perry County, Mo., (8) 270.

**Gruner, J. W.,** crystal structure of dickite, (8) 282; crystal structure of kaolinite, (8) 282; crystal structure of nacrite and comparison of certain optical properties of the kaolin group with its structures, (8) 282; hydrothermal alteration of montmorillonite to feldspar at temperatures from 245° to 300°C, (8) 276; structural relationship of nontronites and montmorillonite, (8) 277; talc and pyrophyllite crystal structure, (11) 389.

**Gurevich, M.,** rational classification of light-scattering media, (1) 16.

**Hall, F. P.,** influence of chemical composition on physical properties of glazes, (7) 246; method of measuring plasticity of clays, (5) 168; plasticity of clays, (2) 67.

**Hall, F. P., and Insley, Herbert,** phase-rule diagrams, (6) 221.

**Hänlein, W.,** relation of specific gravity of glass to temperature, (6) 193.

**Hardy, F., and Lewis, A. H.,** rapid electrometric method for measuring lime requirements of soils, (5) 168.

**Harker, Alfred,** metamorphism, (6) 219.

**Harrison, W. N.,** controlling consistency of enamel slips, (2) 66; outline of preliminary work on test for acid resistance, (1) 2.

**Harvey, F. A.,** comparison of used silica brick from insulated and uninsulated basic open-hearth roofs, (10) 356.

**Harvey, F. A., and Birch, R. E.,** mullite development in super-duty fireclay brick, (2) 57.

**Hauser, E. A., and Reed, C. E.,** development of new method for measuring particle-size distribution in colloidal systems, (10) 367; studies in thixotropy: I, (3) 91.

**Havard,** refractories and furnaces, (6) 226.

**Havelock, T. H.,** dispersio of double refraction in relation to crystal structure, (1) 30.

**Heide, F.,** montmorillonite, (8) 279.

**Heindl, R. A.,** thermal expansion of refractories to 1800°C, (6) 226.

**Hendricks, S. B.,** crystal structure of clay minerals, dickite and halloysite, (8) 272; diffraction of X-radiation from some crystalline aggregates, (8) 271.

**Hendricks, S. B., and Fry, W. H.,** results of X-ray and microscopical examinations of soil colloids, (8) 268.

**Hering, Carl,** comparisons of electrical resistivities at high temperatures, (6) 228.

**Herzfeld, K. F.,** theory of forced double refraction, (1) 27.

**Herzfeld, K. F., and Lee, R. H.,** theory of forced double refraction, (1) 27.

**Hickling, G.,** china clay: its origin and nature, (8) 279.

**Higgins, E. F., and Pitman, E. C.,** measurement of viscosity of pyroxylin solutions, (5) 168.

**Hillebrand, W. F.,** analysis of silicate and carbonate rocks, (6) 198.

**Hirsch, Hans,** properties of magnesite brick, (6) 225.

**Hobson, G. D.,** viscometric measurements of clay suspensions, (5) 168.

**Hodson, F.,** origin of bedded Pa. fire clays in the U. S., (8) 272.

**Hofmann, U., and Bilke, W.,** innerkristalline quellung und das basenaustauschvermögen des montmorillonits, (8) 276.

**Hofmann, U., Endell, K., and Wilm, D.,** kristallstrucktur und quellung von montmorillonit (crystal structure and swelling of montmorillonite), (8) 276, (11) 389; röntgenographische und kolloidchemische untersuchungen über ton, (8) 273.

**Hogg, King, and Rumford,** relation of pyrometer to back wall and roof, (2) 43.

**Hostetter, J. C., and Roberts, H. S.,** dissociation of ferric oxide dissolved in glass and its relation to color of iron bearing glasses, (9) 322.

**Houldsworth, H. S., and Cobb, J. W.,** behavior of fire clays, bauxites, etc., on heating, (11) 389.

**Houwink, R.,** elasticity, plasticity, and structure of matter, (11) 373.

**Hull, A. W., and Burger, E. E.,** glass-to-metal seals, (6) 211.

**Hunter, R. G.,** application of Stokes' law in determination of absolute viscosity of glass, (10) 348.

**Hunter, R. S.,** Null method photoelectric reflectometer, (1) 19.

**Insley, H.,** microstructure of earthenware, (11) 382; observations of surface deposits formed in glass furnace regenerators, (2) 56.

**Insley, H., and Ewell, R. H.,** hydrothermal synthesis of kaolinite, dickite, beidellite, and nontronite, (8) 284; thermal behavior of the kaolin minerals, (8) 284, (11) 373.

**International Critical Tables,** data on magnesia, (6) 227; electrical conductivity of magnesia, (6) 228–29.

**Iredale, T.,** adsorption from gas phase at a liquid-gas interface, (6) 196.

**Jaeger, F. M.,** optical activity and high temperature measurements, (6) 193; temperature coefficient of free molecular surface energy of liquids between 80°C and 1650°C, (6) 193.

**Johnson, J. B.,** thermal agitation of electricity in conductors, (2) 37.

**Jourdain, M. A.,** studies of constituents of refractory clays by thermal analysis, (11) 389.

**Kanolt, C. W.,** melting points of some refractory oxides, (6) 217.

**Kautz, Karl,** chemical determinations of metallic particles and oxides of iron, nickel, and cobalt in fired ground coats, (9) 311; discussion of Lord paper, (9) 303, 313; effect of iron surface preparation upon enamel adherence, (9) 314; further data on enamel adherence, (9) 311; random experiments on enamel adherence, (9) 311; reply to Staley's discussion on "Critical analysis of statements and experiments on adherence of sheet-steel ground coats," (9) 303, 307.

**Kelley, W. P., Dore, W. H., and Brown, S. M.,** nature of base-exchange material of bentonite, soils, and zeolites, as revealed by chemical investigation and X-ray analysis, (8) 276.

**Kelley, W. P., and Jenny, H.,** relation of crystal structure to base exchange and its bearing on base exchange in soils, (8) 283.

**Kelley, W. P., Jenny, H., and Brown, S. M.,** hydration of minerals and soil colloids in relation to crystal structure, (8) 276.

**Kelley, W. P., and Liebig, G. F., Jr.,** base exchange in relation to composition of clay with special reference to effect of sea water, (8) 276.

**Kelly, W. J.,** determination of particle size, (3) 90, (11) 395.

**Kerr, P. F.,** attapulgite, (8) 279; attapulgus clay, (8) 276; bentonite from Ventura, Calif., (8) 275; kaolinite from a Brooklyn subway tunnel, (8) 271, (8) 274; kaolinite from terminal moraine of Staten Island, (8) 274; montmorillonite or smectite as constituents of fullers' earth and bentonite, (8) 276; tungsten mineralization at Silver Dyke, Nev., (8) 271.

**Kerr, P. F., and Cameron, E. N.,** fullers' earth of bentonitic origin from Tehachapi, Calif., (8) 276, (8) 279.

**Kitaigorodskii, I. I., and Solomin, N. W.,** rate of setting of glass during working, (10) 345.

**Klein, A. A.,** constitution and microstructure of porcelain, (11) 371; time and temperature of burning as factors influencing constitution and microstructure of a porcelain body, (11) 371.

**Knight, W. C.,** bentonite (Wyo.), (8) 275; mineral soap, (8) 275.

**Köhn, M.,** determination of grain size by pipette analysis, (3) 90.

**Kolthoff, I. M., and Sandell, E. B.,** textbook of quantitative analysis, (5) 180.

**Konopicky, Kamillo, and Tassel, Hans,** sintered magnesite: I, quantitative investigation of compounds produced, (6) 223.

**Kowalke, O. L., and Grenfell, D. S.,** temperature of reaction between Acheson graphite and magnesia, (6) 227.
**Kraner, H. M.,** importance of glass phase in porcelain, (11) 371.
**Krause, O.,** studies of structure of hard porcelain, (11) 381.
**Ksanda, C. J., and Barth, T. F. W.,** note on structure of dickite and other clay minerals, (8) 282.
**Kubelka, P., and Munk, F.,** contribution to optical studies on colored paints, (1) 16.
**Kühl, J.,** formation of kaolin and alunite near Sandomierz, Poland, (8) 273.

**Lampman, C. M.,** flow of glazes on flat and inclined surfaces, (7) 252.
**Lapparent, J. de,** boehmite and diaspore in bauxitic clays of Ayrshire, (8) 272.
**La Rotonda, C.,** physical properties of colloids, (5) 173.
**Larsen, B. M., Schroeder, F. W., Bauer, E. N., and Campbell, J. W.,** service conditions of refractories for open-hearth steel furnaces, (2) 41.
**Larsen, B. M., and Shenk, W. E.,** total radiation pyrometer protection, (2) 44.
**Larsen, E. S., and Berman, Harry,** microscopic determination of nonopaque minerals, (6) 223.
**Larsen, E. S., and Steiger, G.,** dehydration and optical studies of alunogen, nontronite, and griffithite, (8) 277; nontronite, (8) 279.
**Larsen, E. S., and Wherry, E. T.,** beidellite, a new mineral name, (8) 277; leverrierite from Colo., (8) 276.
**Laudermilk, J. D., and Woodford, A. O.,** secondary montmorillonite in Calif. pegmatite, (8) 276.
**Lehmann, H., and Neumann, W.,** clay substance: contribution to judgment of rational analysis, (8) 273.
**Lemberg, J.,** silikatumwandlungen, (8) 283.
**Levy and Lacroix,** index of refraction of periclase, (6) 223.
**Lewis, W. K., Squires, L., and Thompson, W.,** colloidal properties of clay suspensions, (5) 173.
**Lilley, E. R.,** geology of some kaolins of western Europe, (8) 271.
**Lillie, H. R.,** viscosity of glass between the strain point and melting temperature, (10) 348.
**Lindgren, W.,** origin of kaolin, (8) 271.
**Litinsky, L.,** development of refractories containing magnesite, (6) 216.
**Littleton, J. T., Jr.,** method for measuring softening temperature of glasses, (10) 347.
**Logan, W. N.,** a bio-chemical theory of origin of indianaite, (8) 273.
**Lohnstein, T.,** sessile-drop approximation formulas, (6) 195.
**Longchambon, H.,** caracteristiques des palygorskites, (8) 278; caracteristiques de la sepiolite d'Ampandrandava et la formule des sepiolites, (8) 279; constituants minéralogiques essentiels des argiles, en particulier der terres à foulon, (8) 276; courbes des dehydration des minéraux, (8) 285; propriétés caracteristiques des palygorskites, (8) 278.
**Longchambon, H., and Migeon, G.,** sepiolites, (8) 279.
**Lucian, A. N., and Kautz, Karl,** study of gases in enameling iron, (9) 304.

**Mack, G. L.,** determination of contact angles from measurements of small bubbles and drops: I, spheroidal segment for acute angles, (6) 206.
**Mack, G. L., and Lee, D.,** determination of contact angles from measurements of dimensions of small bubbles and drops: II, sessile drop for obtuse angles, (6) 199, (6) 206.
**Maegdefrau, E., and Hofmann, U.,** glimmerartige mineralien als tonsubstanzes, (8) 280; kristallstruktur des montmorillonits, (8) 282.
**Magistad, O. C., and Burgess, P. S.,** alcoholic salt solutions for determination of exchangeable bases in calcareous soils, (5) 181.
**Mallard, F. E.,** artificial periclase, (6) 217.
**Marshall, C. E.,** colloidal properties of clays as related to their crystal structure, (8) 282; constitution of clay minerals, (8) 276; importance of lattice structure of clays for study of soils, (8) 283; layer lattices and base exchange clays, (8) 283; new method of determining the distribution curve of polydisperse colloidal systems, (3) 90.
**Mattson, S. E.,** electrodialysis of colloidal soil material and exchangeable bases, (5) 166; laws of soil colloid behavior: I, (5) 173; V, ion adsorption and exchange, (5) 165; neutral salt reaction in relation to point of exchange neutrality, saturation, and combining capacity of a soil, (5) 166.
**Mattson, S. E., and Gustafsson, Yngve,** laws of soil colloid behavior: XVIII, colloidal electrolytes, (5) 166; XX, neutral salt effect and amphoteric points of soils, (5) 167.
**Mattson, S. E., and Hou, Kwang-Chiung,** equi-ionic point and point of exchange neutrality of soils, (5) 167.
**Mauguin, C.,** étude du mica muscovite au moyen des rayons, X, (8) 282; réseaux polaires et diagrammes de diffraction des rayons, X, (8) 282.
**McDowell, J. S., and Howe, R. M.,** magnesite refractories, (6) 216.
**McIntyre, G. H.,** graphical computation of opacity of porcelain enamels, (1) 23.
**McIntyre, G. H., and Bevis, R. E.,** frit solubility: I, comparison of methods of determination and relation of soluble salts to enamel slip consistency, (2) 66, (5) 184; II, controlled variables of frit composition and their relation to enamel consistency, (2) 66.
**McIntyre, G. H., and Gerdes, P. E.,** effect of neutralizing solutions on ground-coat draining, (2) 66.
**McIntyre, G. H., and Irwin, J. T.,** application of Gardner mobilometer to enamel slip consistency studies and controls, (2) 66, (5) 184.
**McIntyre, G. H., Irwin, J. T., Carter, W. K., and King, R. M.,** effect of sodium aluminate on consistency and acid resistance of acid-resistant enamels, (2) 66.
**McQueen, H. S.,** geologic relations of diaspore and flint fire clays of Mo., (8) 272.
**Mehmel, M.,** beitrag zur frage des wassergehaltes der minerale kaolinit, halloysit, und montmorillonit, (8) 272.
**Mellor, J. W.,** can the firing temperature of a body be determined from microscopic appearance, (11) 371; crazing and spalling of glazes, (7) 249; inorganic and theoretical chemistry, (6) 226; spalling of magnesite brick, (6) 216.
**Merritt, G. E.,** thermal expansion of some fused oxides used as refractories, (6) 226; (10) 352.
**Meulen, J. B. van der,** relation between the phenomenon of cation exchange with silica-alumina complexes and their crystal structure, (8) 283.
**Meyer, W. W.,** colloidal nature and related properties of clays, (5) 165; computation of heat treatments for whiteware bodies, (11) 373.
**Meyer, W. W., and Klinefelter, T. A.,** substitution of domestic for imported clays in whiteware bodies, (3) 76, (11) 372.
**Milliken, W. A.,** pyrophyllite developments in N. C., (9) 330.
**Miwa, M.,** nature of polished layers of metals, (6) 211.
**Moore, B., and Patrick, W. L.,** fused magnesia, (6) 220.
**Morey, G. W.,** annealing of Pyrex chemical-resistant glass, (3) 85; glass: the bond in ceramics, (11) 371.
**Mott, W. R.,** boiling point of MgO, (6) 217.
**Mueller, Hans,** theory of photoelastic effect of cubic crystals, (1) 28; theory of photoelasticity in amorphous solids, (1) 30, (3) 88.
**Murray, B. L.,** tests for reagent chemicals, (9) 321.

**Nagelschmidt, G.,** lattice shrinkage and structure of montmorillonite, (8) 285; röntgenographische untersuchungen an tonen, (8) 271; X-ray investigations of clays: III, differentiation of micas by X-ray powder photographs, (8) 279.
**Nakai, V. T., and Fukami, Y.,** X-ray examination of ceramic raw materials, V, (11) 389.
**Navias, Louis,** extrusion of refractory oxide insulators for vacuum tubes, (6) 227.
**Nelson, H. R.,** primary oxide film on iron, (6) 211.
**Nichols, J. B., and Liebe, H. C.,** centrifugal method for determination of distribution of size of particle of suspended material, (3) 90.
**Niederleuthner, R.,** unbildsame rohstoffe keramischer massen, (11) 389.
**Noble, W. N., and Lindsey, G. S.,** investigation of physical factors affecting draining qualities of ground-coat enamels, (2) 66.
**Noll, W.,** synthese von montmorilloniten, (8) 284.
**Northrup, E. F.,** discussion of paper by O. L. Kowalke and D. S. Grenfell, temperature of reaction between Acheson graphite and magnesia, (6) 227.
**Norton, C. L., Jr.,** influence of time on maturing temperature of whiteware bodies: II, (11) 371.
**Norton, F. H., and Hodgdon, F. B.,** influence of time on maturing temperature of whiteware bodies: I, (3) 75, (11) 371.
**Norton, F. H., and Speil, S.,** measurement of particle sizes in clay, (10) 368.

**Oefelein, R. T.,** mineralogical study of loess near St. Charles, Mo., (8) 277.
**Ominin, L. V., and Popova, V. T.,** utilization of pyrophyllite in porcelain and faience, (11) 388.
**Orton, E.,** clays of Ohio, their origin, composition, and varieties, (8) 271.
**Ouillet, C., and Rideal, E. K.,** investigation of adsorbed films by means of photoelectric counter, (6) 212.

**Palache, C., and Vassar, H.,** minerals of Keweenawan copper deposits, (8) 278, (8) 279.
**Parmelee, C. W., and Harman, C. G.,** effect of alumina on surface tension of molten glass, (6) 193, (6) 210, (10) 339.
**Parmelee, C. W., and Lyon, K. C.,** maximum bubble-pressure (Jaeger) method for measurement of surface tension of molten glass, (6) 193, (6) 210, (10) 339.
**Patrick, W. L.,** fused magnesia in nonferrous industry, (6) 220.
**Pauling, L.,** crystal structure of micas and related minerals, (11) 389; principles determining structure of complex ionic crystals, (8) 281; structure of the chlorites, (8) 281, (11) 389; structure of micas and related minerals, (8) 281.
**Paver, H., and Marshall, C. E.,** rôle of aluminum in reactions of clays, (5) 176.
**Peck, A. B.,** effect of time and temperature on microstructure of porcelain, (11) 371.
**Perrott, G. St. J., and Kinney, S. P.,** meaning and microscopic measurement of average particle size, (9) 298.
**Phelps, S. M., and Marbaker, E. E.,** ceramic table tops, (3) 111.
**Piersol, R. J., Lamar, J. E., and Voskuil, W. H., Anna** "kaolin" as new decolorizing agent for edible oils, (8) 276.
**Pietenpol, W. B.,** surface tension of molten glass, (6) 193.
**Piper, C. S.,** volumetric determination of potassium by cobaltinitrite method, (5) 180.
**Pole, G. R., and Moore, D. G.,** testing refractories against corrosive action of electric furnace phosphate slags, (6) 224.
**Porcelain Enamel Institute,** reflectance test for opaque white porcelain enamels, (1) 23; report of Comm. on Standardization of Tests, (1) 2; report on test for acid resistance of porcelain enamels, a tentative standard, (1) 2.
**Porter, A. W.,** calculation of surface tension from experiments: I, sessile drops, (6) 195, (6) 205, (10) 343.
**Preston, E., and Turner, W. E. S.,** volatilization and vapor tension at high temperatures of sodium silicate-silica glasses, (6) 202.
**Preston, G. D., and Bircumshaw, L. L.,** effect of heat treatment on structure of gold and silver lead, (6) 211; studies on oxidation of metals: II, copper, brass, aluminum, bronze, magnesium, and some magnesium alloys, (6) 211.
**Proctor, H. R., and Wilson, J. A.,** acid-gelatin equilibrium, (5) 174.

**Quincke, G.,** sessile-drop method, approximation formula in calculations, (6) 193.

**Rankin, G. A., and Merwin, H. E.,** ternary system $CaO$–$Al_2O_3$–$MgO$, (6) 217; ternary system $MgO$–$Al_2O_3$–$SiO_2$, (6) 227.
**Ransome, F. L.,** association of alunite with gold in the Goldfield District, Nev., (8) 271.
**Rees, W. J., and Chesters, J. H.,** preliminary investigation of magnesia-zircon series, (6) 217.

**Richard, T. W., and Boyer, S.,** further studies concerning gallium, (7) 252.
**Rideal, E. K.,** introduction to surface chemistry, (6) 194, (6) 206.
**Ridgway, R. R., Klein, A. A., and O'Leary, W. J.,** preparation and properties of so-called "beta-alumina," (10) 351.
**Rieke, R., and Navratiel, H.,** ability of porcelains to stand temperature changes, (11) 373.
**Rieke, R., and Tscheischwili, L.,** viscosity of kaolin and clay suspensions measured with different viscosimeters and effect upon it of different methods of treating the materials, (5) 168.
**Ries, H.,** clays, their occurrences, properties, and uses, (8) 268; high-grade clays of eastern U. S., (8) 273; review of theories of origin of white residual kaolins, (8) 271.
**Robinson, G. W.,** new method for mechanical analysis of soils and other dispersions, (11) 393; soils, their origin, constitution, and classification, (5) 166.
**Roehm, V. J.,** notes on operation of direct-fire tunnel kilns, (7) 239.
**Rogers, A. F.,** review of amorphous minerals, (8) 273.
**Ross, C. S.,** altered Paleozoic volcanic materials and their recognition, (8) 280.
**Ross, C. S., and Foshag, W. F.,** anauxite, a mineral species based on material from Bilin, Czechoslovakia, (8) 270.
**Ross, C. S. and Kerr, P. F.,** clay minerals and their identity, (8) 271; halloysite and allophane, (8) 268, (8) 274; kaolin minerals, (8) 268, (8) 274.
**Ross, C. S., and Shannon, E. V.,** chemical composition and optical properties of beidellite, (8) 277, (8) 279; minerals of bentonite and related clays and their physical properties, (8) 275, (8) 279, (8) 281.
**Ryde, J. W., and Cooper, B. S.,** scattering of light by turbid media, (1) 16.

**Schlünz, F. K.,** eine microskopische, röntgenographische, und chemische untersuchung des liastons von dobbertin, (8) 280.
**Scholes, S. R.,** modern glass practice, (8) 291.
**Schollenberger, C. J., and Dreibelbis, F. R.,** analytical methods in base-exchange investigations on soils, (5) 177.
**Schramm, E., and Hall, F. P.,** fluxing effect of feldspar in whiteware bodies, (11) 381.
**Schramm, E., and Scripture, E. W., Jr.,** particle analysis of clays by sedimentation, (3) 90.
**Schrödinger, E.,** capillary pressure in gas bubbles, (10) 339.
**Schurecht, H. G.,** elutriation tests on American kaolins, (11) 393; sedimentation as a means of classifying fine clay, (3) 90.
**Searle, A. B.,** editor, encyclopedia of the ceramic industries, (6) 226; refractory materials, their manufacture and use, (6) 216.
**Selle, V.,** verwitterung und kaolinbildung Halleschen quarzporphyre, (8) 279.
**Shearer, W. L.,** control of ceramic slip plasticities, (2) 66.
**Shelton, G. R.,** nature of glass phase in heated clay materials: I, common clays, (11) 371; pyrophyllite, a new ceramic raw material, (11) 388.
**Shelton, G. R., and Holscher, H. H.,** gases obtained from commercial feldspars heated in vacuo, (11) 382.
**Shepherd, E. S., Rankin, G. A., and Wright, F. E.,** binary systems of alumina with silica, lime, and magnesia, (6) 217.
**Siedentopf, H.,** ophthalmometric methods for molten metals, (6) 199.
**Silberstein, L.,** transparency of turbid media, (1) 16.
**Singer, Felix,** physical properties of ceramic bodies, (6) 217.
**Smekal, A.,** effect of structure in decreasing the strength of glass, (10) 335; process of rupture of glasses, (10) 335.
**Smith, T.,** hiding power of diffusing media, (1) 16.
**Smyth, C. P.,** dielectric constant and molecular structure, (1) 29.
**Smyth, F. H., and Adams, L. H.,** system calcium oxide–carbon dioxide, (11) 390.
**Somers, R. E.,** microscopic study of clays, (8) 279.
**Sommerfeldt, E.,** note on periclase, (6) 217.
**Sommerville,** variation of electrical resistance of oxides with temperature, (6) 228.
**Sortwell, H. H.,** effect of variation in firing on physical properties of vitreous china bodies, (11) 371.
**Sosman, R. B.,** International Temperature Scale, (2) 40; properties of silica, (6) 225, (9) 322.
**Soule, B. A.,** determination of ferrous iron in silicate rocks, (9) 323.
**Spalek, V.,** genesis and age of kaolins near Znojmo, South Moravia, (8) 272.
**Spencer-Strong, G. H., and King, R. M.,** mechanics of enamel adherence: IX, (9) 311.
**Sprost, I. E.,** use of pyrophyllite in wall-tile bodies, (6) 236, (11) 388.
**Staley, H. F.,** critical analysis of statements and experiments on adherence of sheet-steel ground coats, discussion of Lord paper, (9) 311; electrolytic reactions in vitreous enamels and their relation to adherence of enamels to steels, (9) 311.
**Steele, F. A.,** optical characteristics of paper: I, mathematical relationships between basis weight, reflectance, contrast ratio, and other optical properties, (1) 18.
**Steele, J. G., and Bradfield, R.,** significance of size distribution in clay fraction, (3) 91, (11) 394.
**Steger, W.,** measuring stress in fired ceramic ware, (7) 243.
**Stokes, G. G.,** intensity of light reflected from or transmitted through a pile of plates, (1) 16.
**Stuckey, J. L.,** dehydration temperature of pyrophyllite and sericite, (11) 389; pyrophyllite deposits of N. C., (11) 389.
**Sutton, R. J., and Fritze, J. R.,** process for increasing electrical resistance of fused magnesium oxide, (6) 220.
**Svedberg, T., and Rinde, H.,** determination of distribution of sizes of particles in dispersed systems, (3) 90.

**Tailby, R. V.,** pyrophyllite, a study of its use in ceramic bodies, (11) 388.
**Tammann, G.,** temperature of beginning of inner diffusion in crystals, (6) 212.
**Tammann, G., and Zworykin, A.,** determination of agglomeration temperatures, (6) 212.
**Taylor, N. W.,** adherence of glass to metals, (6) 196, (6) 206.
**Taylor, N. W., and Dear, P. S.,** elastic and viscous properties of several soda-silica glasses in the annealing range of temperature, (3) 89.
**Taylor, N. W., McNamara, E. P., and Sherman, J.,** study of elastico-viscous properties of a soda-lime glass at temperatures near the "transformation point," (3) 87.
**Taylor, N. W., and Williams, F. J.,** reactions between solids in system $CaO$–$MgO$–$SiO_2$ in temperature range 600°C and 1200°C, (6) 219.
**Tenney, J. B.,** second report on mineral industries of Ariz., (8) 275.
**Thilo, E., and Schunemann, H.,** chemical studies of silicates: IV, behavior of pyrophyllite, $Al_2(Si_4O_{10})(OH)_2$, on heating and the existence of a "water-free pyrophyllite," $Al_2(Si_4O_{10})O$, (11) 389.
**Tillotson, E. W.,** surface tension of molten glasses, (6) 193.
**Treadwell, F. P., and Hall, W. T.,** analytical chemistry, (9) 308.
**Trostel, L. J.,** quartz as devitrification product of vitreous silica, (2) 54.
**Truog, E., and Chucka, J. A.,** origin, nature, and isolation of inorganic base exchange compound of soils, (9) 325.

**Valenkov, N., and Poray-Koshitz, E.,** X-ray investigation of glassy state, (2) 52.
**Van Vleck, J.,** electric and magnetic polarizabilities, (1) 29.
**Verschaffelt, J.,** measurement of surface tensions by means of small drops or bubbles, (6) 199; shape of large liquid drops and gas bubbles and use made of them for measurement of capillary constants, (6) 199; shape of small drops and gas bubbles, (6) 199, (10) 339.
**Vesterberg, K. A.,** kaolin: (1) thermal changes, (2) rational analysis of clays, (11) 389.
**Viather, E. H., and Lasson, M. L.,** grain-size measurements of kaolins and clays, (11) 396.
**Voigt, W.,** contributions to electronic theory of light, (1) 27.
**Volkmann, P.,** source of error in surface tension of mercury, (6) 199.

**Wagner, L. A.,** rapid method for determination of specific surface of Portland cement, (11) 395.
**Wark, I. W.,** physical chemistry of flotation: I, significance of contact angle in flotation, (6) 196, (6) 205.
**Warren, B. E.,** diffraction of X-rays in glass, (1) 29; small-angle X-ray scattering, (2) 53; X-ray determination of structure of glass, (1) 29.
**Warren, B. E., and Biscoe, J.,** Fourier analysis of X-ray patterns of soda-silica glass, (8) 288; structure of silica glass by X-ray diffraction studies, (7) 264.
**Warren, B. E., Krutter, H., and Morningstar, O.,** Fourier analysis of X-ray patterns of vitreous $SiO_2$ and $B_2O_3$, (2) 50, (7) 259, (8) 287.
**Warren, B. E., and Loring, A. D.,** X-ray diffraction study of structure of soda-silica glass, (7) 259.
**Wasastjerna, J. A.,** structure of atoms according to the dispersion theory, (1) 29.
**Washburn, E. W., Footitt, F., and Bunting, E. N.,** dissolved gases in glass, (6) 196.
**Washburn, E. W., and Libman, E. E.,** viscosities and surface tensions of soda-lime glasses at high temperatures: II, (6) 193, (6) 205, (10) 340.
**Washburn, T. S., and Nead, J. H.,** structure of rimmed-steel ingots, (1) 13.
**Watts, A. S.,** data on influence of firing time on properties of some whiteware bodies, (11) 371.
**Watts, O. P.,** action of carbon on magnesia at high temperatures, (6) 220.
**Weinschenk, E.,** beiträge zur mineralogie Bayerns, (8) 277.
**Wherry, E. T.,** tabulation of aluminum silicate minerals, (8) 273.
**White, H. E.,** electrical resistivity of specialized refractories, (6) 224.
**Wiener, O.,** theory of refraction constants, (1) 27.
**Wilkes, G. B.,** thermal conductivity of magnesite brick, (6) 224.
**Wilson, E. O.,** plasticity of finely ground minerals with water, (1) 33.
**Wilson, R. E., and Hall, F. P.,** measurement of plasticity of clay slips, (2) 66.
**Winchell, A. N.,** elements of optical mineralogy, (6) 223.
**Wöhler, L., and Frey, W.,** solid solutions from dissociation of oxides of platinum, (6) 212.
**Wöhler, L., and Witzman, W.,** formation of solid solutions during dissociation of iridium oxide, (6) 212.
**Worthington, A. M.,** error involved in Quincke's method of calculating surface tensions from dimensions of flat drops and bubbles, (6) 195.
**Wright, F. E.,** manufacture of optical glass and optical systems, (9) 320.

**Zachariasen, W. H.,** atomic arrangement in glass, (8) 290, (11) 382.
**Zachariasen, W. H., and Ziegler, G. E.,** crystal lattice of boric acid ($BO_3H_3$), (8) 288; crystal structure of calcium metaborate, $CaB_2O_4$, (8) 288; crystal structure of $KH_5(H_2O)_2B_4O_{10}$, (8) 288, (8) 292.

# INDEXES TO CERAMIC ABSTRACTS

Compiled by

THE AMERICAN CERAMIC SOCIETY

ROSS C. PURDY, *Editor*

**Vol. 17** **December, 1938** **No. 12**

## AUTHOR INDEX

The reference number in parentheses refers to the *monthly* issue of *Ceramic Abstracts;* the number following is the *page* number. The letters A, B, and P preceding the reference number indicate an abstract of (A) an article, (B) a book, bulletin, or separate publication, or (P) a patent.

**A., C. L.** English delftware, A (9) 297; Modern Italian glass, A (9) 297.
**Abbé, P. O.** Ball and pebble mill, P (9) 311.
**Abbott, E. J.** See Bousky, S.
**Abbott, L. E.** See Townsend, J. R.
**Abernethy, R. F., Cooper, H. M., and Tarpley, E. C.** Determination of forms of S in insoluble residues from hydrogenated coal, A (10) 336.
**Abramo, F.** See Azzarello, E.
**Abreu, S. F.** Rutile in Brazil—occurrence, composition, and treatment, B (2) 83; Titanium on coast of Espiritu Santo, B (2) 83.
**Achauer, C. V.** See Roberts, J. H.
**Ackerman, E. G.** Glass *vs.* nonceramic substitutes, A (3) 99.
**Ackley, E. L.** See Bath, S. W.
**Ackley, R. A., and Walters, F. M., Jr.** Precision recording dilatometer, A (8) 285.
**Adams, C. E.** Drill grinder, P (5) 170.
**Adams, E. Q.** See Compton, K. T.
**Adams, F. D.** Origin and nature of ore deposits—historical study, A (3) 116.
**Adams, F. W.** Purification of glassmaking sands on commercial scale, A (9) 304.
**Adams, L. H.** Earth's interior—nature and composition, A (10) 339.
**Adler, J.** Developments in pavement design, A (4) 142.
**Aidinyan, N.** See Smirnov, V.
**Aitken, J.** Process and apparatus for manufacturing oxides or suboxides of Pb, P (2) 88.
**Aitken, R. B.** Large screen in porcelain enamel on steel, A (1) 9.
**Akans, W. R.** Grinding and polishing apparatus, P (6) 208.
**Aksenov, V. I., Baikov, A. A., Kind, V. A., Kogan, L. S., Royak, S. M., and Ruschuk, G. M.** Pozzuolanic cements, B (1) 6.
**Aktien-Gesellschaft Brown, Boveri & Cie.** Means for supporting refractory brick roofs of electric resistance furnaces, P (6) 223.
**Aktien-Gesellschaft der Gerresheimer Glashüttenwerke vorm. F. Heye.** Table for glass plates, P (9) 306.
**Aktien-Gesellschaft für Glasindustrie vorm. F. Siemens and Schlosinger, J.** Glass roofing, P (5) 183.
**Albers-Schönberg, E.** Ceramic insulators for condensers, A (10) 332; Ceramic materials in insulation technology, A (6) 224.
**Albert, C. G.** Developments in filler clays, A (4) 156.
**Albihn, H. F.** See Stand, T. A. R.
**Albrecht, E.** Factors influencing results of mechanical tests on glass, A (5) 178; Velocity of cooling and heating multilayer safety glass, A (2) 66.
**Alcácer, J. N.** Composition and properties of clays, A (10) 338.
**Alcock, V. G. H., Bloore, R. B., Lindley, W. S., and Bart, P. R.** Decoration of pottery, P (8) 270.
**Aldinger, R.** Black enamel for cast iron, A (2) 56; Composition of enamels, A (8) 271; Enamel calculations, A (6) 213; Enamel as industrial material, A (6) 213; Enameling edges of sheet-iron ware, A (2) 57; Improving damaged enamel coats, A (5) 174; Magnesia as constituent of enamel, A (11) 348; Raw ware manufacture for enameled sheet-iron ware, A (2) 58; Resistance to wear of enamel surfaces, A (7) 245; Sodium fluosilicate as opacifier for enamels, A (2) 58; Structure of enamels, A (5) 175; $TiO_2$ in enamel industry, A (11) 349; Treating and cleaning enameled ware, A (2) 59; Water-soluble constituents in enamel, A (3) 97.
**Aldridge, E. W.** See Polden, D. C.
**Aleixandre, V.** Adsorption of gases by glass walls: XIV, $CO_2$ and Jena glass—kinetics of adsorption, A (2) 59.
**Aleksandrov, I. A.** Rôle of fluxes in burning of mixture for obtaining Portland cement clinker, A (3) 95.
**Alekseeva, E. F., and Godlevskii, M. N.** X-ray studies of hydrosilicate of nickel, A (6) 235.
**Alexander, C.** Accessions of Greek and Roman antiquities, A (2) 53.
**Alexander, P. P.** Hydride process: III, Ti silicides, A (11) 345.
**Alexanian, C. L.** Identification of natural decolorizing clays by mode of dehydration, A (2) 82.
**Alexopoulos, K.** See Delyannis, A. A.
**Algren, A. B.** See Rowley, F. B.
**Allmarin, I. P., and Fried, B. J.** Method for detecting small amounts of Nb and Ta in minerals, rocks, and metals, A (2) 85.
**Alimova, P. P.** See Rybnikov, V. A.
**Alison, A.** Collation of experimental data: Nos. 42–45, A (1) 46; Nos. 46–50, A (4) 160.
**Allen, A. H.** Pressed steel bathtubs, A (2) 57–58.
**Allen, C. M.** Sanitary lavatory, P (7) 257.
**Allen, H.** Microscope determines suitability of steel surfaces prior to finishing, A (2) 57.
**Allen, H. V.** Hot-face insulation, A (1) 19.
**Allen, L., White, N. W., Box, E. R., and Johnson, Matthey, & Co., Ltd.** Decoration of ceramic products, P (6) 211.
**Allen, V. T.** Mineral composition and origin of Mo. flint and diaspore clays, B (1) 40.
**Alliott, E. A.** Filtration, A (3) 110.
**Allis-Chalmers Mfg. Co.** Low-head horizontal vibrating screen, A (3) 110.
**Allison, H. M.** See Bath, S. W.
**Altenhein, E. F. O.** See Eske, F. W.
**Aiyavdin, V. V.** Formula for determining output of multichamber mills, A (9) 310.
**Amand, R.** Apparatus for molding refractory crucibles, P (10) 332; Molding refractory crucibles, P (9) 309.
**Amat, M.** See Duclaux, J.
**Amazon, H.** See Rubenstein, S.
**Ambeg.** Glass containers for pharmaceuticals, A (5) 178.
**Amberg, K.** Grinding microscopic specimens on lead disk with fixed abrasive, A (5) 169.
**American Electroplaters' Society, Cleveland Branch.** Health hazards in plating industry, A (8) 293.
**American Foundry Equipment Co.** Multirotary blasting table, A (1) 2.
**American Optical Co.** Respirator to prevent silicosis, A (9) 311; Safety goggles, A (2) 79.
**American Rolling Mill Co.** Stainless steel letters on enameled store front, A (2) 58.
**American Securit Co.** Colored glass, P (8) 277; Producing colored and tempered glass sheets, P (1) 17.
**American Society for Testing Materials.** Proceedings of fortieth annual meeting, Vol. 37, 1937: I, Committee reports and tentative standards; II, Technical papers, B (7) 266; Symposium on radiography and X-ray diffraction methods, 1936, B (6) 235.
**American Zinc, Lead, & Smelting Co.** Obtaining MgO and $CaCO_3$ from dolomitic material, P (1) 45.
**Amidon, C. H.** Grinding machine, P (2) 52, P (6) 208; Grinding machine headstock, P (6) 208; see Cole, R. A.
**Amsler, W. O.** Annealing leer, P (9) 305; Method and apparatus for annealing glassware, P (9) 306.
**Anable, A.** Dorr multizone classifier, A (4) 150.
**Anand, B.** See Puri, A. N.
**Anderegg, F. O.** Building block, P (7) 252.
**Anderson, B. W., and Payne, C. J.** Magnesium-zinc spinels from Ceylon, A (9) 313.
**Anderson, C. E.** Method and means for abrading lenses, P (3) 102.
**Anderson, C. E., and Palmer, C. R.** Design for hollow double-wall glass reflector, P (1) 5.
**Anderson, D.** Manufacture of brick from alumina cement and corundum, P (9) 308.
**Anderson, H. O.** Flexible coated abrasive product, P (9) 296; Grinding wheel, P (1) 3.
**Anderson, R. G.** See Blazek, J. Y.
**Anderson, R. J.** Russian Al, A (6) 231; World resources of Al ore, A (1) 40.
**Anderson, V. E.** Grinding apparatus, P (3) 92.
**Anderson, W. B.** Physics for technical students—mechanics and heat, B (6) 235.
**Anderson, Y. R.** Mortar for unit masonry, A (9) 316.
**Anderton, J.** See Dobbs, F. S. W.
**Andreasen, A. H. M.** Colloidal fraction of milled material, A (11) 359.
**Andreasen, A. H. M., Berg, S., and Kjaer, E.** Colloid milling with a ball mill, A (8) 284.
**Andrée, H., and Claus, G.** Brass centrifuge for mineral separation according to specific gravity, A (2) 77.
**Andrew, J. H., and Nicholson, C. G.** Iron-cobalt system, A (1) 8.

**Andrews, L.** Classification of material by elutriation, P (1) 31.
**Andrzhievskii, I. K.** Manufacture of thermometric glass at Druzhnaya Gorka works, A (3) 99; Melting glass 846 with Inderskii borates, A (1) 13.
**Angus, H. T.** Cast iron for vitreous enameling, A (3) 96.
**Angus, T. C., and Stewart, D.** Dust hazards and their control in ceramic industry, A (6) 236.
**Anselm, W., and Schindler, K.** Determining quality of clinker, A (6) 211.
**Antipov, P. A.** Unfired grogless refractory from Dsekh rocklike deposits, A (1) 23.
**Apelt, G.** Effect of rate of loading and torsional deformation on tensile strength of glass rods, A (2) 61.
**Appen, A. A.** Chemical compounds in glasses, A (5) 176; Surface tensions in sodium-lead-silica glasses, A (1) 14.
**Appleyard, E. T. S., and Lovell, A. C. B.** Electrical conductivity of thin metallic films: II, Cs and K on Pyrex brand glass surfaces, A (11) 350.
**Appleyard, K. C.** Apparatus for separation of coal, P (2) 79; see Birtley Co., Ltd.
**Arbogast, A. C.** Spray head, P (10) 336.
**Archer, R. S., Burns, J. L., and Brown, V.** Troubles due to grinding or machining, A (1) 2.
**Ardenne, M.** Determining glass strains by spatial observations in polarized light, A (5) 177.
**Arkhangelskii, A. D.** (editor). Bauxites: Vol. I, Part II, B (6) 232.
**Armitage, J. B.** Cutter grinder, P (8) 268.
**Armstrong, E. F.** Ceramics and refractories, A (11) 353.
**Armytage, F. W.** Glass bottle manufacturing machine, P (1) 15; Paddles for forehearths of glass furnaces, P (7) 251.
**Arndt, W.** Suitability of profile glasses in window glazing, A (6) 217.
**Arner, W. J.** Chemist at work: V, Chemical research in glass industry, A (10) 326.
**Arness, W. B.** Rustless iron, P (9) 301.
**Arnold, C.** Manufacture of glass, P (1) 16; Refractory products, P (6) 223.
**Arnold, H. W., and Badger, C.** Glass press, P (7) 250.
**Arnold, J. C.** Manufacture of opacifiers for vitreous enamels, P (8) 272.
**Arnot, E.** Feldspar in glass, A (1) 12.
**Arnulf, A., and Winter-Klein, N.** High-precision refractometer, A (4) 150.
**Asbridge, H. H.** Precision grinding machine, P (2) 52; see Churchill Machine Tool Co., Ltd.
**Asghar, A. G.** See Puri, A. N.
**Ash, W.** See Pugh, C. T.; Tudor Safety Glass Co., Ltd.
**Aspenleiter, J. W.** Ophthalmic mounting, P (11) 352.
**Assurex "Le Roi des Verres de Sécurité" Magnien, Monnier, & Cie., and Petit, L. A. E.** Apparatus for hardening sheet glass by air cooling, P (2) 67.
**Astakhov, I., Nekrassov, I., and Grechko, G.** Blast-furnace bottom, A (6) 220-21.
**Astanovitzkaya, S. N.** See Mazel, V. A.
**Astbury, H.** Importance of temperature control in vitreous enameling, A (10) 324.
**Athy, L. F.** See McCollum, E. V.
**Atkins, H. F.** Frictional driving mechanism for spindles of grinding wheels, P (2) 52.
**Atkinson, R. A.** Enamel-shop troubles in 1936 in Canada, A (1) 8.
**Atkinson, W. H.** Filtering gas through glass, A (9) 303.
**Atlas Mineral Products Co.** Acidproof brick joined with sulfur cement protects concrete and steel, A (10) 332.
**Atwood, F. C.** Grinding machine, P (11) 361.
**Aubert, A.** Thermal-conductivity coefficients of heat-insulating and refractory materials, A (8) 281.
**Aubert, M., and Coulton, G. G.** Stained glass of 12th and 13th centuries from French cathedrals, B (8) 270.
**Auckland, W.** Glass-tube cutter, P (10) 328.
**Auerbach, R.** Vibration viscosimetry, A (8) 285.
**Augustin, F.** Manufacture of graphite crucibles, A (7) 253.
**Aurien, G.** Drawing double-walled window-panes, P (7) 250.
**Austin, J. B.** Linear thermal expansion of "beta-alumina," A (11) 354.
**Australian Window Glass Pty., Ltd.** Glass sheets, P (8) 277.
**Avery, C. L.** Early Italian majolica, A (9) 297; English ceramics, A (2) 53.
**Avlasenko, N.** Magnesite and dolomite deposits of Krasnoyarskii region, A (7) 262.
**Awbery, J. H.** Temperature rise in material whose thermal properties vary with temperature, A (7) 264; see Griffiths, E.
**Azarov, K. P., and Kemmer, N.** Comparative determination of acid resistance of enameled ware, A (2) 57.
**Azarov, K. P., and Savchenko, V. I.** Resistance of enamel to acid under high pressure, A (9) 300.
**Azzarello, E., and Abramo, F.** Analysis of refractories, A (3) 103.

**B., J.** Methods of control in glass silvering, A (2) 64.
**Babcock, C. L.** See Burch, O. G.
**Babcock & Wilcox, Ltd.** Furnace walls, P (5) 189.
**Babcock & Wilcox, Ltd., and Gibson, J. H.** Tool for lapping disk faces of valves on their seats, P (6) 209.
**Babcock & Wilcox, Ltd., and Lummus Co.** Furnace walls, P (4) 146.
**Babiev, E. I.** See Volodin, P. L.
**Bacher, H. R.** Problems of art potter, A (10) 323.
**Bacher, W.** Errors in stoneware manufacture, A (8) 282.
**Bacon, R. F.** Recovery of $SO_2$ from gases, P (8) 294.
**Badger, A. E.** See Parmelee, C. W.; Schwalbe, W. L.
**Badger, C.** See Arnold, H. W.
**Bahnsen, M. J.** Mill additions: Setting-up agents; Opacifiers, A (10) 324; see Sweo, B. J.
**Bähr, H.** Purifying gases by I. G. Alkazid process and extracting S by I. G. Claus process, A (9) 316.
**Baier, A.** Electrically fired ceramic kilns, A (2) 80.
**Baikov, A.** See Aksenov, V. I.
**Bailey, B. L.** See Ridgway, R. R.
**Bailey, E. G.** Action of slag from fuel in boiler furnaces, A (4) 142.
**Bailey, E. G., and Hardgrove, R. M.** Pulverizer, P (4) 153; Retaining means for furnace wall blocks, P (6) 223.
**Bailey, J.** Measuring surface tension of glass by fiber weight method, A (9) 304.
**Bailey, W.** Jamestown pottery, A (3) 93.
**Bailey Meter Co.** Furnace draft controller, A (1) 28.
**Bairstow, S.** See Binns, V.
**Baker, C. L., and Jue, L. R.** System sodium metasilicate–water from 90°C to ice point, A (6) 234.
**Baker, C. P., and McGrath, W. A.** Easily constructed orifice, A (10) 334.
**Baker, F. T.** Roman pottery kiln at Lincoln, A (7) 260.
**Baker, G.** Tektites, A (2) 83.
**Baker, J. G.** See Gunness, R. C.
**Bakhmutova, M. K.** Volumetric determination of Al in aluminate solutions, A (2) 87.
**Baldenhofer, W. G.** Machine for grinding and sharpening broaches, P (6) 208.
**Bale, W. F.** See Hodge, H. C.
**Bales, C. E., Hewitt, L. C., and Phelps, S. M.** Discussion of "Effect of fluxes on cupola linings," A (10) 330.
**Ball, A. L.** Apparatus for cutting hard substances, P (9) 295; see Benner, R. C.; Scutt, A. G.
**Ball, A. L., and Benner, R. C.** Segmental abrasive wheel, P (8) 268.
**Ball, A. L., and Scutt, A. G.** Making composite abrasive article, P (5) 170.
**Ball, R.** Keep it clean, A (1) 46.
**Balleny, J. L.** Electric heat in ceramic industry, A (1) 32.
**Bally, J.** Glass and aluminum, A (4) 137.
**Balmer, J. H.** Design for combination soap holder and grab rail, P (11) 347.
**Balog Ferenc és Társa Fal- és Padlóburkoló Vállalat and Forgó, I.** Colored glass plates, P (7) 250.
**Balsiger, H. E.** Cylindrical grinding machine, P (3) 92; see Ott, C. L.
**Banner, W.** See Liberty Shoes, Ltd.
**Bannister, F. A., and Hey, M. H.** Pycnometric method for specific gravity of heavy solids, A (9) 311.
**Barber, C. R.** Sulfur boiling-point apparatus with internal electric heating, A (1) 31.
**Barber, D. R.** Portable thermocouple potentiometer, A (2) 79.
**Barber, E. G.** See Bately, R. L.
**Barbour, J. A., and Southhook Potteries, Ltd.** Manufacture of fired clay slabs, P (2) 76.
**Barclay, A. E., Franklin, K. J., and Macbeth, R. G.** Radiographic studies of excretions of dusts from lungs, A (11) 368.
**Baritel, A.** Radiation properties of silico-alumina refractories, A (6) 222.
**Barker, G. J., and Truog, E.** Improving stiff-mud clays by *p*H control, A (10) 329.
**Barker, W. T., Jr.** See Peiler, K. E.
**Barkley, J. F.** (compiler). Smoke abatement, B (10) 337.
**Barlett, H. B.** See McDougal, T. G.
**Barnebl, A. J.** Rotary filter, P (9) 312.
**Barnes, W.** Material handling equipment, A (4) 150.
**Barnick, M. A. W.** Structure of natural wollastonite, B (3) 117.
**Barreto, A.** Index for study of ceramic materials and soils, A (1) 43.
**Barrett, C. S.** Electron diffraction in research, A (4) 161.
**Barrett, E. P.** See Taylor, J. A.
**Barrett, E. P., and Holbrook, W. F.** Fused magnesia crucibles, A (8) 280.
**Barrett, H. N.** See Eells, H. P., Jr.
**Barrett, L. R.** Rehydration of fired brick clays, A (2) 68.
**Barsch, G.** Knife-sharpening device, P (10) 322.
**Bart, P. R.** See Alcock, V. G. H.
**Barta, R.** Classification of mixed cements, A (2) 55; Decorative ceramics in Czechoslovakia, A (7) 242; Slovak ceramics in Prague, A (7) 243.
**Barta, R., and Šandera, K.** Graphs and calculations in ceramics, B (7) 264.
**Bartell, F. E.** See Murray, C. A.
**Barth, W.** Device for determining powder and dust particle sizes and dust content, P (9) 319.
**Barthelmess, E.** See Falkenstein, E.
**Bartlett, J. B., Ruble, R. W., and Thomas, R. P.** Influence of $H_2O_2$ treatments on exchange capacity of Md. soils, A (1) 37.
**Barton, E. G. C.** Means for sharpening drill, P (5) 170.
**Barton, W. K.** See Pattison, H. J.
**Bartsch, O.** Impact bending strength of ceramic bodies and glasses—relationship to resistance to thermal shock of fireclay bodies, A (11) 354; Tank-block testing, A (5) 189.
**Baruther Glashüttenwerke Alfred Kaiser.** See Sächs. Glasfabrik August Walther & Söhne, A.-G.
**Bary, P., and Herbert, J.** Plasticity and viscosity of glasses—points of transformation, A (5) 180.
**Bash, F. E.** Estimating life of electric heating elements, A (8) 284.
**Bashilov, I. Ya.** Zr compounds, P (7) 265.
**Basic Dolomite, Inc.** Glass lime, A (4) 138.
**Bassa, B.** Tunnel kiln, A (8) 287.
**Bassett, H. N.** Use and care of crucibles, A (3) 106.
**Bastow, S. H., and Bowden, F. P.** Physical properties of surfaces: II, Viscous flow of liquid films—range of action of surface forces, A (7) 240.
**Bastow, S. H., and Whillock, R. H.** Enamel thickness gage, A (9) 299.
**Bately, R. L., and Barber, E. G.** Refractories from maintenance standpoint, A (10) 331.
**Bates, L. G.** Glass-feeding apparatus, P (4) 140.
**Bates, P. H.** Controlling hydration heat of cements, A (1) 6.
**Bath, S. W., and Ackley, E. L.** Machine for grinding flutes, P (8) 268.
**Bath, S. W., and Allison, H. M.** Self-adjusting spindle bearing, P (11) 347.
**Batta, G., and Scheepers, L.** Advances in refractory materials industry, A (3) 103.
**Batzer, G. J.** Grinding device, P (2) 52.
**Bauch, W. H.** Abrading, polishing, and buffing device, P (3) 92.
**Bauer, E. E.** Chemical aspects of manufacture and use of Portland cement, A (4) 131; Processes in manufacture of Portland cement, A (4) 132.
**Bauer, J. E.** Wall construction, P (7) 251.
**Bauer, W., and Gerlach, A.** Laminated glass, P (1) 16.
**Baum, L. A. H.** See Brown, C. E.
**Baumann, H. N., Jr.** See Benner, R. C.; Blau, H. H.
**Baumann, H. N., Jr., and Swentzel, J. P.** Physical properties of SiC refractories, A (1) 21.
**Baumeister, T.** Auxiliaries—steam or electric drive, A (6) 224; Machinery in clay industry, A (8) 284.
**Baumgarten, A.** Flotation of fluorspar and quartz (polar nonmetallic minerals), A (11) 360; see Gerth, G.

**Baur, H.** See Rau, A.
**Bausch & Lomb Optical Co.** Production of multilayer glasses for spectacles, P (3) 102; Research on optical glass, A (2) 65.
**Bayer, L. D.** See Whitt, D. M.
**Bayer, E.** Homogenizing glass in tank furnaces, A (5) 179.
**Bayne.** See Heaton.
**Bayreuther, K.** Soup cup design, P (2) 54.
**Bazilevich, A. S.** Heat of dehydration of clays, A (1) 43; Testing magnesium silicates as refractories, A (1) 23.
**Beall, L. M.** Arch and wall construction, P (3) 106.
**Beam, J. R.** Water closet, P (11) 359.
**Bean, A.** Mineral resources of Johore (Malay), A (10) 340.
**Beard, C. R.** Bavarian enamels of 17th Century, A (9) 296; "Lion" jewel—work of Corvinianus Saur owned by Lord Fairhaven, A (5) 171; Martin ware—catalogue of Nettlefold collection with history of R. W. Martin & Bros. of Southall, B (3) 93.
**Beard, E. H.** Strontium minerals, B (1) 40.
**Beare, W. G., and Bowden, F. P.** Physical properties of surfaces: I, Kinetic friction, A (7) 240.
**Beasley, H. C.** Copperheading, A (6) 212.
**Beaver, H. L.** Barrel finishing of metal products: I–VIII, A (4) 148; IX, A (1) 27.
**Becker, F.** See Englert, R.
**Becker, R.** Breakdown field strength of solid electric insulating materials between 1 and 15 megacycles, A (3) 99.
**Beevers, C. A., and Ross, M. A. S.** Crystal structure of "beta alumina," $Na_2O \cdot 11Al_2O_3$, A (1) 42.
**Behar, M. F., and Rimbach, R.** Instrumentation, A (4) 150.
**Behrens, M., and Holzner, J.** Rapid micromethod for determining specific gravities of minerals and rock constituents, A (9) 311.
**Beik, F. A.** Fusing borates, P (10) 336.
**Beiler, A. H.** Bushing flashovers reduced by porcelain umbrellas, A (11) 358.
**Beilinov, M.** Slag removal from pockets of open-hearth furnaces in a single block, A (6) 222.
**Belden, A. G.** Grinding machine, P (7) 241.
**Belden, A. G., and Cole, R. A.** Hydraulic wheel feed, P (7) 241.
**Beletzkii, M. S.** Calcination of hydrated alumina, A (1) 41; Disintegration of cryolite, A (7) 263.
**Bell, C. H.** Tile-making apparatus, P (3) 112.
**Bell, E.** Stemmed goblet design, P (3) 94, P (5) 172.
**Bell, J. C.** Heat transfer of porcelain enamel metals, etc., B (9) 301.
**Bell, W. D.** Screen stencil, P (5) 172.
**Belladen, L.** Methods of testing refractory materials: III, Temperature of incipient softening according to C.T.I. and DIN methods, A (4) 143.
**Bellaschi, P. L.** Lightning strokes in field and laboratory: II, A (4) 147.
**Bellone, A. F. S.** Manufacture of $MnO_2$, P (9) 317.
**Belovodskii, V. V.** See Tabakov, Z. Ya.
**Belyankin, D. S., and Ivanova, V. P.** Transformation of kaolin on heating, A (7) 262.
**Belyankin, D. S., and Petrov, V. P.** Occurrence of cristobalite in sedimentary rock, A (10) 340.
**Belyankin, D. S., and Vinogradova, A. M.** Transfer of silica in gaseous form, A (11) 366.
**Bem, J. P.** Brick and block wall reinforcing, P (9) 307.
**Benad, H.** See Emicke, O.
**Benard, F.** Recovery of Se and Te at Copper Cliff, Ont., A (11) 364.
**Bendryshev, A. P., and Shapiro, A. D.** Abrasive disks with ceramic bond, A (8) 267.
**Benedetti-Pichler, A. A., and Bryant, J. T.** Qualitative separations on a microscale—analysis of alkali group, A (8) 291.
**Benner, R. C.** See Ball, A. L.
**Benner, R. C., and Ball, A. L.** Refiner, P (10) 322.
**Benner, R. C., and Baumann, H. N., Jr.** Refractory material, P (8) 282.
**Benner, R. C., and Easter, G. J.** Furnace wall, P (3) 107.
**Benner, R. C., and Melton, R. L.** Abrasive-coated article manufacture, P (4) 128; Coated abrasive product, P (3) 92, P (11) 346; Cylinder grinder, P (10) 322; Making abrasive articles, P (10) 322; Making abrasive-coated material, P (11) 346; Production of flexible abrasive articles, P (11) 347.
**Bennett, A. R.** See Radiation, Ltd.
**Bennett, J. S.** Furnace wall, P (6) 223.
**Bennett, W.** Clear-vision antiglare windshield, P (2) 67.
**Bennie, H. D.** After-contraction test for fireclay brick, A (5) 185; Spalling of fireclay brick, A (3) 105.
**Benoit, F. P. C.** Apparatus for projection of molten pulverized bodies, P (10) 336.
**Benoit, J. P.** Dual leer loader, P (6) 217.
**Benoliel, D. J.** Alkalis in pickle-room cleaning, A (1) 7; Drawing compounds—composition and suitability, A (9) 299.
**Bent, H. E., and Lesnik, G. J.** Chemical reactions of water adsorbed on glass, A (2) 60.
**Benton, E. A.** Apparatus for molding ventilating or hollow brick, P (3) 112.
**Benton, W. E.** Evolution of enameling, A (11) 348.
**Berestneva, Z. Ya., and Kargin, V. A.** Mechanism of adsorption of electrolytes by aluminum hydroxide sols, A (9) 316.
**Berg, E. L.** Catlinite and Sioux quartzite, A (10) 338; Diaspore in quartzite, A (4) 156.
**Berg, F. F.** Purifying boric acid, P (6) 235.
**Berg, S.** See Andreasen, A. H. M.
**Berger, E.** Crushing and sieving glass to insure control of grain surface, A (1) 11; Principles of chemical corrosion of glass, A (1) 13; Work of W. Weyl on constitution of glasses, A (2) 66.
**Berger, E., and Geffcken, W.** Time law of extraction of glasses, A (2) 66.
**Berger, E., and Smekal, A.** Discussion of "Character of transformation point," A (10) 325-26.
**Berger, L. B., and Schrenk, H. H.** Bureau of Mines Haldane gas-analysis apparatus, B (11) 361.
**Bergeron, P.** Brick of artificial agglomerated mullite for regenerator packing, A (2) 69.
**Bergmann, L.** See Schaefer, C.
**Bergmann, P.** See Guertler, W.
**Bergstrom, J. E.** Centerless grinding machines, P (6) 208.
**Berliner Gipswerke L. Mundt.** Improving gypsum, P (9) 299.
**Berliner Quarz-Schmelze, G.m.b.H.** Production of perforated quartz plates, P (7) 251.
**Berman, H.** Constitution and classification of natural silicates, A (1) 36.
**Berman, S. S.** Heat transfer between heated and unheated tanks of the furnace by gas streams, A (7) 248.
**Bernewitz, M. W. von.** See Davis, C. W.; Fieldner, A. C.
**Berrisford, W. H.** Mineral separator, P (5) 199.
**Berry, C. H.** Specific enthalpy of low-pressure steam, A (6) 238.
**Berry, E. G., and Reimuller, C. L.** Supporting means for gyratory sifters, P (10) 336.
**Berry, F. J.** Apparatus for dry separation of materials of different densities, P (3) 112.
**Berthold, R.** Technical auxiliary devices for X-ray and gamma-ray irradiation, A (10) 335.
**Bertolet, E., and Oser, J. I.** Homemade electric furnace, A (4) 150.
**Bertrand, G.** Presence and distribution of B in K salts of Alsace, A (1) 39.
**Besedin, S. M.** See Zamotaev, S. P.
**Beth, H. W. H.** Grinding wheel mounting, P (5) 170.
**Bettendorf, C.** See Rohstoffhandel der Vereinigten Stahlwerke G.m.b.H.
**Betz, G. C.** Li minerals and compounds in ceramics, A (6) 233.
**Beuken, C. L.** Heat losses from furnaces, etc., in intermittent operation—calculation of nonstationary heat flow, A (9) 312.
**Bevis, R. E.** See Irwin, J. T.; McIntyre, G. H.
**Beyersdorfer, K.** Enamel, P (5) 175.
**Bezborodov, M. A., Zav'yalov, N. D., and Kurlyankin, F. A.** Effect of raw materials on devitrification of quartz glass, A (5) 177.
**Bezborodov, M. A., Zav'yalov, N. D., Lade, T. A., and Minkin, G. M.** Behavior of saltpeter and arsenic trioxide when heating glass melts, A (4) 136.
**Bezborodov, M. A., Zav'yalov, N. D., and Sokolova, A. A.** Effect of heat treatment on mechanical strength of transparent quartz glass, A (2) 61.
**Bhagavantam, S.** Interpretation of structure of band spectra, A (3) 119.
**Bhatt, N. B.** High-frequency spectrum of mercury vapor, A (3) 118.
**Bicks, J. W.** Bottle design, P (11) 347.
**Bierbrauer, E.** Ore concentration process, A (5) 193.
**Bieth, T. C.** Cyclone apparatus for separating solid particles from gases, P (5) 194.
**Bigelow, H. K.** Method and apparatus for finishing brake shoes, P (7) 242.
**Bigge, H. C.** Crucible tool steel—its manufacture, A (4) 149; Raw materials for tool and alloy steels as made in crucible, induction, and basic arc furnaces, A (11) 360; Tool steels—induction furnace melting, A (11) 360.
**Biggs, H. C.** Refractoriness under load test, A (9) 308; see Stein, J. G., & Co., Ltd.
**Billington, D.** Stoneware pottery, A (6) 210.
**Billson, J. H.** Manufacture of Portland cement (mechanical processes), A (1) 6.
**Biltz, W., Weibke, F., and Fraeger, L.** Molecular refractions and volumes of glasses, A (10) 326.
**Binayendra, N. S.** Latent heat of fusion, A (5) 200.
**Binks Mfg. Co.** Automatic spraying of porcelain enamel speeds production, cuts cost, A (2) 56.
**Binns, V., and Bairstow, S.** Combustion control by electric meters, A (4) 153.
**Birch, F.** Effect of pressure on modulus of rigidity of metals and glasses, A (7) 247.
**Birch, R. E.** Notes on refractories, A (7) 254; see Harvey, F. A.
**Birchall, F. A.** See Boulton, W., Ltd.
**Bird, B. M.** Mechanical concentration methods, A (10) 334.
**Birtley Co., Ltd., Appleyard, K. C., and Pollitt, S. D.** Separation of mixed materials of different electrical conductivities, P (2) 80.
**Biscoe, J.** See Warren, B. E.
**Biscoe, J., and Warren, B. E.** X-ray diffraction study of soda-boric oxide glass, A (9) 305.
**Bishop, D. F. W.** Lead and silicosis—factory precautions, A (7) 265.
**Bishop, F. L.** Laminated glass, P (1) 16; Manufacture of sheet glass, P (7) 250.
**Bishopp, D. W.** Formation of laterite, A (1) 36.
**Bissel, E. S.** Propeller-type mixers, A (10) 2-3.
**Black, H. M.** Apparatus for feeding glass, P (1) 15; Glass feeder, P (9) 305.
**Blackburn, P.** Future of porcelain enameled iron as building material, A (9) 300.
**Blacktin, S. C.** Instrument for counting and weighing particles of dust, smokes, etc., A (9) 310.
**Blackwell, H. A., and Turner, W. L.** Apparatus for separating Mg, Be, etc., which distill from their ores and compounds, P (8) 292.
**Blair, J. M.** See Jones, M. W.
**Blakely, A. M.** Life history of a glaze: I, Maturing of whiteware glaze; II, Measurement of stress in cooling glaze, A (8) 283.
**Blanc, E. C.** Laws of crushing and grinding—research and results, A (2) 51.
**Blank, A. J.** See Blank, J. A.
**Blank, J. A., and Blank, A. J.** Manufacture of cementitious materials, P (10) 324.
**Blau, H. H., and Baumann, H. N., Jr.** Furnace lining, P (7) 255.
**Blau, H. H., and Knaell, K. K.** Glass furnace, P (8) 277; Glassmelting tank, P (8) 277; Glass treating apparatus, P (8) 277; Means and method for treating glass, P (8) 278.
**Blau, J.** Early German-Bohemian glass factories and glassmakers, A (6) 215.
**Blazek, J. Y., and Anderson, R. G.** Grinding machine, P (8) 268.
**Bleasdale, A.** Machine for grinding cylindrical and external surfaces, P (7) 241; see Connor, K. W.
**Bley, F.** Abrasive saw tooth, P (2) 52.
**Bloch, E.** See Bloch, L.
**Bloch, L., and Bloch, E.** Spectrum of Sb in extreme ultra-violet range, A (1) 44.
**Blokhin, A.** Mineral soil treasures of Russia, A (3) 116.
**Blomquist, U. O.** See Stand, T. A. R.
**Blood, H. L.** Grinding machine, P (1) 3, P (11) 346; Hone, P (5) 170.
**Bloom, F. S.** Apparatus for producing progressively delayed combustion, P (7) 261.

**Bloom, M. C.** See Buerger, M. J.
**Bloore, R. B.** See Alcock, V. G. H.
**Blottefière, R. de.** Ceramic discussions, A (8) 269.
**Blount, E. A.** Application of electroplating practice to porcelain enameling, A (3) 95.
**Blum, H. J.** See Technova Patent und Neuheiten Export, G.m.b.H.
**Boardman, H.** Developments of airless shot-blasting, A (3) 96.
**Bockemühl, K.** See Leitgebel, W.
**Boden, J.** See Pfefferkorn, K.
**Bodin, V.** Zig-Zag kiln—technical analysis, A (5) 196.
**Bodin, V., and Gaillard, P.** Drying and duration of firing, A (3) 113; Linear expansion of ceramic products between ambient temperature and 1000°C, B (7) 260; Tunnel kiln—suitability for construction materials, A (1) 34.
**Boehm, C.** Practice of statistics—measurement of dissimilarities of distribution, A (11) 366.
**Bogatzkii, D.** Investigation of system $TiO_2$–$SiO_2$, A (4) 162.
**Bognár, A.** Various types of laboratory glasses, A (7) 249.
**Bogoroditskii, N. P., and Friedberg, I.** Dielectric losses in organic glasses at radio frequencies, A (4) 137.
**Bogoroditskii, N. P., and Titov, N. V.** Dielectric material, P (5) 191.
**Böhme, J.** See Espe, W.
**Bold, J. W.** See Ryan, W. M.
**Bole, G. A.** Beneficiation of common clays, A (7) 261; European paving brick, A (6) 220; Insulating refractories—manufacture and properties, A (2) 72.
**Bolman, J.** Examination of precious stones, A (1) 46.
**Bond, F. C.** Determining circulating load in wet closed-circuit grinding system, A (11) 359.
**Bond, F. C., and Maxson, W. L.** Grindability and grinding characteristics of ores, A (6) 225.
**Bondarev, A. I.** See Myasoedov, A. N.
**Bondarev, K. T., and Vanin, V. I.** Manufacture of sheet ruby glass, A (7) 248.
**Bone, H. M., and Williams, R. C.** Method and product for treating glass wool, P (4) 141.
**Bonnell, D. R. G.** Problems with porous building materials, A (9) 307.
**Bonnet, L.** Ceramic composition, P (3) 109; Ceramic mixtures, P (7) 266.
**Bonnot, M.** Studying and controlling refractory products, A (2) 74.
**Booge, J. E., Krchma, I. J., and McKinney, R. M.** Attacking water-insoluble titaniferous material, P (1) 45; Recovering soluble Ti compounds from titaniferous ores, P (1) 45.
**Booth, C., and Rees, W. J.** Basic refractories in lining of induction furnaces, A (10) 329.
**Booth, E. H.** Glass brick—thermal conduction, A (2) 62.
**Borchard, K. H.** Influence of loading velocity and form of loading curve on strength values of hollow glassware, A (1) 12; Recognition of breaks in glass due to slow loading, A (2) 65.
**Borisov, P. A.** Kyanite of Kola Peninsula—problems of highly refractory materials, A (7) 262.
**Born, W.** Five centuries of glass: I, Ruhmann collection, A (4) 137; II, A (6) 215; Imperial Vienna porcelain—Bloch-Bauer collection, A (6) 209.
**Bosazza, V. L.** Petrographic methods in study of silica brick, A (7) 254; Physical properties of S. African raw materials for silica brick, A (5) 187; Relationship between structure and life of silica brick in roof of open-hearth steel furnace, A (5) 188; Discussion, A (5) 188; Author's reply to discussion, A (11) 356; South African materials for silica refractories, A (4) 145.
**Bosch, R., A.-G.** Compositions for spark plugs, P (6) 224, P (7) 257; Manufacture of ceramic ignition plug insulators, P (11) 359; Vehicle lamp glasses, P (11) 352.
**Bosley, D. A., Jr.** Preparing a surface, P (7) 242.
**Bostwick, H. C.** Applications of electric furnaces and controlled atmospheres, A (10) 333.
**Bottini, O.** Thermal decomposition of mixed "ammonium-calcium" permutites, bentonites, and clays, A (8) 292.
**Bottome, E. M.** Goblet design, P (3) 94, P (8) 271; Plate design, P (8) 271.
**Boudin, L., and Poeymirou, H.** Method and apparatus for producing corrugated glass sheets, P (9) 306.
**Boulié, A.** Tetrametaphosphate of sodium, A (10) 343.
**Boulton, W., Ltd., Farr, C., and Birchall, F. A.** Potters' jolleys, P (3) 112.
**Bounds, A. M.** See Doan, G. E.
**Bousky, S., and Abbott, E. J.** Measuring plated and polished surfaces, A (7) 240.
**Boutaric, A., and Thévenet, S.** Physicochemical properties of colloidal clay solutions, A (6) 231.
**Bouyoucos, G. J.** Evaporating water with burning alcohol to determine moisture content of soils and molding sands, A (7) 264; High degree of accuracy of improved soil hydrometer in mechanical analysis of soils, A (2) 78; Sensitive hydrometer for determining small amounts of clay or colloids in soils, A (1) 30, A (8) 285.
**Bowden, F. P.** See Bastow, S. F.; Beare, W. G.
**Bowden, F. P., and Hughes, T. P.** Physical properties of surfaces: IV, Polishing, surface flow, and formation of Beilby layer, A (3) 92.
**Bowden, F. P., and Ridler, K. E. W.** Physical properties of surfaces: III, Surface temperature of sliding metals—temperature of lubricated surfaces, A (7) 240.
**Bowen, A.** Sculptured crystal tables, A (7) 243.
**Bowen, K. H.** Abrading apparatus, P (6) 208.
**Bowen, N. L.** See Kracek, F. C.; Schairer, J. F.
**Bowen, N. L., and Ellestad, R. B.** Leucite and pseudoleucite, A (1) 37.
**Bowen, S. F.** Combination coaster and ash-tray design, P (7) 244.
**Bowles, J. A. C., and Partridge, H. M.** Rare-earth salts—precipitation and $p_H$ studies with glass electrode, A (8) 291.
**Bowles, O.** See Dolbear, S. H.
**Box, E. R.** See Allen, L.
**Boye, E.** Automatic temperature regulation for gas-heated laboratory drying chambers, A (6) 224.
**Boyer, J. A.** Making a boron carbide composition, P (10) 322.
**Boyer, J. A., and Rose, C. G.** Dense nonmetallic bodies, P (5) 170; Hard carbide composition, P (5) 170.
**Boyer, R. L.** See Storch, H. H.
**Bozarth, R. M.** Higher magnetic permeabilities, A (6) 225.
**Bozza, G.** Thermal conductivity under special environmental conditions, A (5) 189.
**Bozzoli, G. R.** See Nel, L. T.
**Brackett, T. F.** Sanding machine, P (5) 171.
**Bradley, A. J.** Qualitative metallographic X-ray technique, A (5) 201.
**Bradley, A. L.** See Chesny, H. H.
**Bradley, C. A., Jr.** Measurement of surface tension of viscous liquids, A (11) 351.
**Bradley, H.** See Kent, B. B.
**Bradley, J. W.** Cartography in refractories industry, A (9) 313.
**Bradley, R. S.** Insulating fire brick as furnace lining, A (11) 354.
**Bradley, W. F.** Chemical investigation of natural clays, A (4) 156; see Clark, G. L.; Grim, R. E.
**Bradley, W. F., Grim, R. E., and Clark, G. L.** Behavior of montmorillonite upon wetting, A (8) 288.
**Bradley Washfountain Co.** Enameled iron wash fountains, A (1) 8.
**Bradshaw, J. H. D.** Sand- and shot-blasting, A (1) 9.
**Bragg, W.** Clay, A (7) 261, A (10) 338; Grain-like structure of solids, A (4) 161.
**Bragg, W. L.** Atomic structure of minerals, B (6) 231.
**Brailsford, J. F.** Radiological demonstration of pathological changes induced by industrial processes, A (11) 368.
**Brain, G.** Story of vitreous china, A (5) 181.
**Brammall, A., Briscoe, H. V. A., Gray, G. W., Middleton, L., King, J., Haynes, F., and Jones, W. R.** Discussion of papers on industrial dusts, A (9) 318.
**Brammall, A., and Leech, J. G. C.** Geochemistry applied to problems of silicosis, A (2) 88; Hydrolysis of rock-forming minerals, A (2) 88; Paragenesis of cookeite and hydromuscovite associated with gold at Ogofar, Caramarthenshire, A (9) 314.
**Bramming, K., and Henriksen, W.** Manufacture of heat- and sound-insulating materials from peat, P (8) 279.
**Brandeis, S. L.** Bottle design, P (3) 93; Flask design, P (2) 54.
**Brandt, H. M.** Change in glass surfaces by grinding and polishing, A (9) 302, A (10) 321.
**Brandt, T. F.** Pothead, P (7) 257.
**Brassert, H. A.** See Brassert, H. A., & Co., Ltd.
**Brassert, H. A., & Co., Ltd., and Brassert, H. A.** Refractory lining for shaft furnace, P (1) 25.
**Braunkohlen- und Brikett-Industrie, A.-G.** Manufacture of water gas in combination with city gas by using coke ovens with externally heated vertical chambers, P (8) 287.
**Bray, R. H.** See Grim, R. E.
**Breadner, R. L.** See General Electric Co., Ltd.
**Bregman, N. S.** Black glass from peat slag, A (1) 10.
**Breidenbach, O. L.** Precision grinding machines, A (3) 92.
**Brekhovskikh, S. M.** Production of Se ruby glass in multipot furnaces, A (11) 351.
**Bremond, P.** Influence of conductivity on internal heating of a refractory and effect on its pyrometric resistance, A (4) 143.
**Bren, B. C.** Laminated article, P (7) 250.
**Brewer, R. C.** See Shepherd, C. B.
**Bridges, E. G.** Glassware-forming apparatus, P (11) 352.
**Brier, R. K.** See Ramsey, D. M.
**Briggs, C. W., Gezelius, R. A., and Donaldson, A. R.** Steel casting design for engineer and foundryman, A (10) 335.
**Briggs Mfg. Co.** Method and apparatus for making lavatories, sinks, wash basins, etc., P (5) 176, P (11) 361; Portable abrading and filing machine, P (2) 52; Portable polishing machines, P (7) 242; Water-closets, P (2) 77.
**Brill, R.** See Lederle, E.
**Brindley, L.** Teapot design, P (9) 298.
**Briner, D. E.** Jar design, P (3) 94.
**Brinkmann, E.** Machines for manufacturing grinding disks, A (10) 321.
**Brinton, P. H. M. P.** Prospecting for Be ores, A (4) 158.
**Briscoe, H. V. A.** Chemical examination of dusts causing silicosis, A (9) 317; see Brammall, A.; Matthews, J. W.
**Briscoe, H. V. A., Matthews, J. W., Holt, P. F., and Sanderson, P. M.** Characteristics of industrial dust, A (2) 88; Sampling of industrial dusts by "labyrinth," A (2) 89; Author's reply to discussion, A (9) 318.
**Bristol Co.** Radiation pyrometer, A (11) 360.
**British Bottles, Ltd., and Hunt, S.** Machine for manufacture of glass articles, P (8) 278, P (9) 305–306.
**British Refractory Materials Section.** Chrome ores used in refractories industry, A (10) 329–30.
**British Standards Institution.** Method for testing chemical stoneware (B.S.S. No. 784—1938), B (7) 256; Portable chemical fire extinguishers (B.S.S. No. 740—1937), B (1) 31; Salt-glazed fireclay pipes (B.S.S. No. 540—1937), B (1) 25; Sampling and analysis of coal and coke (B.S.S. No. 735—1937), B (1) 34.
**British Thomson-Houston Co., Ltd.** Apparatus for sealing metal to glass, P (2) 67; Apparatus for severing vitreous tubing or rods, P (6) 217; Electric bushing insulators of condenser type, P (2) 77; Flexible-backed abradants, P (5) 170; Glass, P (6) 218; Manufacture of glass vessels, P (9) 306; Producing vacuum-tight joints between metallic and insulating bodies, P (2) 77; Sealed electrical connections for ceramic bodies, P (1) 27; Temperature-controlled furnaces, P (2) 81.
**British Thomson-Houston Co., Ltd., Brunt, P. B., and Davis, C. E.** Electric heating elements, P (10) 337.
**British Zonolite Products, Ltd.** Heat-insulating slabs, P (8) 281; Insulating material, A (4) 157; Manufacture of lightweight mineral material, P (8) 281; Manufacture of plastic brick, blocks, tile, etc., P (8) 282; Plastic refractory materials, P (8) 282.
**Bromlei, V. E.** Fusing and degasifying glass, P (8) 277.
**Bromley, J. F.** Silicosis in pottery industry, A (9) 318.
**Bron, V. A.** See Kalnarskii, I. S.

**Brooke, J. B. R.** Reversible regenerative furnace, P (7) 261.
**Brooks, C.** Testing porcelain enameled utensils at Good Housekeeping Inst., A (8) 272.
**Brooks, H. L., and MacIntyre, H. F.** Building construction, P (4) 136.
**Brooks, J. H.** Insulating wall construction, P (1) 25.
**Brooks, R. A.** Siphon breaking water closet, P (9) 309.
**Broomhall, V.** Plate design, P (2) 54.
**Brossé, P.** Apparatus for manufacture of colored glass, P (7) 249.
**Brough, J. E.** See Webb, H. W.
**Broughton, G., and Windebank, C. S.** Agglomeration and viscosity in dilute suspensions, A (8) 290.
**Broughton, W. E.** See McLaughlin, G. E.
**Brown, A. G.** Apparatus for delivering measured quantities of granular materials, P (3) 112.
**Brown, B. D.** Glass feeder, P (6) 208, P (7) 250.
**Brown, C. A., and Hahn, C. E.** Apparatus for severing glass rod and tubing, P (9) 305.
**Brown, C. E.** See Littlefield, J. B.
**Brown, C. E., Baum, L. A. H., Yant, W. P., and Schrenk, H. H.** Microprojection method for counting impinger dust samples, B (6) 238.
**Brown, C. E., and Schrenk, H. H.** Control of dust from blasting by spray of water mist, B (7) 258; Effect of angle of drilling on dust dissemination, B (7) 266.
**Brown, C. W., and North, V. B.** Valve-grinding machines, P (8) 269.
**Brown, C. W., and Parker, G. D.** Brick for building, P (9) 307.
**Brown, D.** Automatic proportioning device, P (3) 112; Method and machine for making clay shingles, P (6) 223.
**Brown, L. S.** Tricalcium aluminate—microstructure of Portland cement clinker, A (4) 133.
**Brown, R. S.** See Clark, C. L.
**Brown, T. A., and Jenkins, D. A.** Roofing and building tile, P (1) 25.
**Brown, V.** See Archer, R. S.
**Brown, W. A.** Cast iron, P (8) 272.
**Brown & Sons.** Finishing surfaces of gea teeth, P (5) 170.
**Brownlie, D.** Air-jacketed heat treatment and forging furnaces, A (6) 220; Colloidal fuel, A (10) 336; Dust removal from chimney gases, A (5) 195; Low-temperature carbonization of bituminous coal, A (1) 33; Sulfur removal from combustion gases, A (3) 113, A (5) 196.
**Bruce, T.** Occurrence of silicosis in manufacture of Si alloys, A (6) 237; see Sundius, N.
**Bruckmayer, F.** See Honigmann, E.
**Bruckner, W. H.** Heat effect in welding—review to Jan., 1937, A (3) 97.
**Bruggeman, D. A. G.** Calculations of physical constants of heterogeneous systems: II, Dielectric constants and conductivities of polycrystals of irregular systems, A (4) 160.
**Brumberg, E. M.** Use of luminous analysis to classify optical glass, A (2) 66.
**Brunner, A. J.** Method and apparatus for working material, P (1) 4.
**Brunot, H. B.** See Ilsley, L. C.
**Brunt, P. B.** See British Thomson-Houston Co., Ltd.
**Bryan, A. M., and Smellie, J.** Laboratory tests on movement of dusts, A (8) 293; Wetting mine dusts, A (1) 47.
**Bryant, J. T.** See Benedetti-Pichler, A. A.
**Bryant, R. C.** Curved abrasive fabric, P (7) 241; Manufacture of flexible abrasive article, P (5) 170.
**Bryson, H. C.** Ca silicate cements (sand-lime brick), A (8) 279; Oxychloride cements—application, A (2) 55.
**Bryson, H. J.** Ceramic raw materials of N. C., A (10) 338.
**Bublitz, E.** Chemical analyses of porcelain earths, etc., A (11) 363; Sanitary ware manufacture in Berlin, A (2) 77.
**Buccar, M. de.** Ba, a ceramic material, A (1) 7.
**Buch, A.** Small electric furnaces in glass industry, A (4) 139.
**Büche, K.** See Fulda, W.
**Bucherer, H. T., and Meier, F. W.** Influence of fluoride on precipitation of $P_2O_5$ by molybdic acid, A (3) 119.
**Buckley, O. E.** See Compton, K. T.
**Buckman, H. O.** See Lyon, T. L.
**Budnikov, P. P., and Gulinova, L. G.** Heat of reaction of $Ca(OH)_2$ with kaolin, aluminum hydroxide, and $SiO_2$ fired at different temperatures, A (2) 85; Relation between calcining temperature of dolomite and quantity of heat evolved by interaction of the calcined product with water, A (1) 22.
**Budnikov, P. P., and Guzev, V. K.** Utilization of waste from alumina production, A (3) 106.
**Budnikov, P. P., and Nirenshtein, D. A.** Refractory material, P (7) 255.
**Budnikov, P. P., and Palatnik, L. S.** Investigation of $CuSO_4 \cdot 5D_2O$ and $CaSO_4 \cdot 2D_2O$ crystals, A (9) 298.
**Buerger, M. J.** X-ray determination of lattice constants and axial ratios of crystals belonging to oblique systems, A (1) 45.
**Buerger, M. J., and Bloom, M. C.** Crystal polymorphism, A (1) 42.
**Bugarev, L. A., Fonim, A. I., and Losev, L. M.** Manufacture of aluminum oxyhydrate from Kobakor bauxites by Boyer method in Uraluminum Works, A (1) 2.
**Bukhman, V. M.** Glass wool, A (11) 350.
**Bulbena, J. M.** Conical stone crushers, A (3) 110.
**Bullock, E. W., Galloway, C. T., Carlsen, L. O., and Condon, R. S.** Machine for grinding gears, P (2) 52.
**Bullock, F. E.** Attachment for centerless grinding, turning, etc., P (1) 3.
**Bulmer, F. M. R.** Dangerous dust and fumes—cause of industrial diseases, A (5) 203.
**Buma, Y.** Bowl design, P (4) 130; Designs for creamer, jar, jug, plate, salt or pepper shaker, sugar bowl, teacup, and teapot, P (4) 131; Plate design, P (1) 5.
**Bunting, E. N.** See Geller, R. F.
**Burch, O. G., and Babcock, C. L.** Effect of glass color on setting rates in manufacture of bottles, A (11) 350.
**Burchard, J. E.** See Compton, K. T.
**Burdett, B.** Chinese ceramics—Kent collection, A (4) 129.
**Burger, E. E.** See Hull, A. W.
**Burger, E. E., and Hull, A. W.** Glass-to-metal seal, P (1) 16.
**Burger, W. L.** Rubbing brick, P (9) 296.
**Burgess, A. F.** Production of siliceous refractory articles, P (3) 107.
**Burgess Zeolite Co., Ltd.** Artificial zeolites, P (8) 292.
**Burke, W. E., and Ropp, H. de.** Process for manufacture of boric acid, P (3) 121.
**Burman, A. S.** Alumina, P (11) 357; Producing pure alumina, P (11) 347.
**Burns, J. L.** See Archer, R. S.
**Burns, R. M.** Corrosion of metals: I, Mechanism of processes, A (4) 134.
**Burr, E. A.** Silica firestone refractories, A (1) 22.
**Burridge, L. W.** Damp-proof courses for brickwork structures, B (1) 18; Efflorescence and staining on brickwork, B (1) 18.
**Burroughs, K. C.** Apparatus for grading emery, P (10) 322; Method and means for abrading lenses, P (11) 346.
**Burt, F. M.** Porcelain enameling in Australia and U. S.: I–II, A (6) 213; III–IV, A (11) 349.
**Buss, C. R.** Spun rock wool, A (8) 275.
**Büssem, W., Schusterius, C., and Ungewiss, A.** X-ray investigations of binary systems $TiO_2$–MgO, $ZrO_2$–MgO, and $ZrO_2$–$TiO_2$, A (11) 366.
**Büssem, W., and Weyl, W.** Ruby formation on worn-out refractory block, A (6) 217.
**Büssing, W.** Temperature measurements on glassmelting furnaces: III, Checking and gaging thermoelements and optical pyrometers, B (3) 101.
**Butcher, C. H.** Stoneware towers, A (4) 146.
**Butler.** See Heaton.
**Butler, C. H.** Means for exfoliating vermiculite, etc., P (11) 361.
**Butterworth, B.** Effects of soluble salts in clay products, A (3) 103.
**Buttinger, H.** See Mayer & Schmidt Schleifmaschinen und Schmirgelwerke, A.-G.
**Büttner.** Advances in ceramic opacifiers, A (8) 290.
**Buzágh, A. von.** Colloid systems, B (9) 317.
**Buzágh, A. von, and Kneppó, E.** Adsorption of weakly solvatized colloids on solid adsorbents: I, Adsorption of colloidal $Fe(OH)_3$ on quartz, A (10) 341.
**Buzzell, D. A.** Fused ceramic material for riprap, A (10) 329.
**Bychkov, M. Ya.** See Zatzepin, K. S.
**Bychkov, M. Ya., and Zatzepin, K. S.** Colored Portland cements, A (5) 172; White Portland cements, A (4) 133.
**Bygden, A.** See Sundius, N.

**C., A.** Determination of Be and Al, A (5) 199.
**C., V.** Algerian diatomite, A (8) 288; Bentonite, A (10) 338; Bentonite in Italy, A (6) 229; Building materials—diatomite and pumice stone, A (3) 115; Highly refractory materials in France, A (5) 186; Sound-insulating materials in ceramics, A (3) 116; Titanium, A (2) 83; see also Charrin, V.
**Cady, G. H.** Classification and selection of Illinois coals, B (2) 90.
**Caglioti, V.** See Parravano, N.
**Calliere, S.** Magnesian silicates of asbestiform or lamellar habit not belonging to antigorite group, A (9) 313; Minerals of serpentine, A (9) 313.
**Caley, E. R.** See Elving, P. J.
**Caley, E. R., and Elving, P. J.** Separation of Ca as sulfate by precipitation in concentrated methanol solution—application to analysis of magnesite and technical MgO, A (10) 343.
**California Steel Products Co.** Ball mill of unique design, A (3) 109.
**Calkins, L. E., and Levi, O. S.** Making inside frosted electric lamp bulbs, P (9) 306.
**Callahan, J. A.** Bathtub, P (9) 301.
**Cameron, A. E.** Sensitive glass electrode of durable form, A (5) 180.
**Cammerer, I. S.** Measurement of thermal conductivity of insulating material encased in sheet metal, A (8) 281.
**Camp, T. P.** Gypsum composition, P (5) 173.
**Campbell, C. I.** Processes in pottery production form museum, A (3) 122.
**Campbell, F. H.** Action of atmospheric agencies on building materials, A (2) 75.
**Campbell, H. L.** Sanding attachment for brickmaking machines, P (7) 252.
**Campbell, T.** Centenary of Australian pottery, A (4) 165.
**Campbell, W. R.** Nonspreading lubricating oils, A (4) 151.
**Canfield, R. W.** Glassmelting furnace, P (4) 140.
**Canfield, R. W., and Waugh, T.** Apparatus for forming glassware, P (4) 140.
**Caplan, M. C.** Failure of gold fuse in contact with Ni-Cr alloy, A (2) 81.
**Cappette, F.** See Coussement, H. P.
**Carbide & Carbon Chemicals Corp.** Spray-drying and solvent recovery system, P (2) 80.
**Carboloy Co., Inc.** Cemented carbide tools, B (9) 311; Grinding wheel, A (9) 295; Rapid grinding technique for new and damaged carbide tools, A (2) 51.
**Carborundum Co.** Abrasive article, P (5) 169; Abrasive products, P (10) 322; Abrasives, P (6) 208; Alkali silicate cements and articles bonded by them, P (6) 208; Lining of rotating furnaces for calcining cement or lime, P (10) 332; Refractory material, P (5) 190, P (7) 255, P (8) 282, P (10) 332; Segmental abrasive wheels, P (10) 322.
**Carlisle, P. M.** Brick and tile machine, P (3) 103.
**Carlsen, L. O.** See Bullock, E. W.
**Carlsohn, H., and Müller, G.** Chemistry of clays: I, Behavior of dyes and organic compounds forming colored salts on clay and related substances; II, Behavior of essential oils and their constituents, A (11) 363.
**Carlson, F. C.** Making barium fluosilicate, P (3) 121.
**Carlson, G. A.** Polishing and buffing machine, P (8) 268.
**Carlson, R. W., and Forbrich, L. R.** Correlation of methods for measuring hydration heat of cement, A (10) 323.
**Carno, R.** Removing scratches, A (1) 9.
**Carpenter, C. B.** See Weinig, A. J.
**Carpenter, L. A., and Schreiner, E. J.** Photoelectric gloss meter, P (10) 336.
**Carson, W. E.** Making rock wool preparations, P (10) 328.
**Carter, M., and Heinz, G.** Ceramic, P (9) 319.
**Carter, W. K.** See McKinley, J. M.
**Carter, W. K., and Duncombe, G. H.** Ceramic manufacture, P (1) 47.
**Cartoux.** Industrial abrasives, A (1) 1.
**Casar, F.** Resistance to compression of refractory brick, A (1) 22.
**Casey, L. G.** Grinding machine, P (1) 3.
**Cass, F. R.** Ashtray design, P (11) 347.

**Cassan, H.** Concept of density, physical magnitudes related thereto, and their applications to ceramics, A (11) 367; Density and associated quantities—application, A (6) 224; Heat conductivity of refractory materials, A (2) 71.
**Cassirer, S.** See Hüttig, G. F.
**Casto, L. V.** Decorative treatment for laminated structures, P (7) 250.
**Castro, R.** See Portevin, A.
**Cath, P. G., and Steenis, O. L. v.** Coefficient of expansion of Ba and Ca and allotropy, A (7) 263.
**Cauwenberg, W. J.** See Ryan, L. W.
**Cauwood, J. D., and Dimbleby, V.** Comparison between standard and rapid methods for analysis of simple glasses, A (1) 11.
**Cavadino, C. G. F.** See Gyproc Products, Ltd.
**Cella, L.** Jug design, P (5) 172.
**Cellular Clay Corp.** Cellular clay products, P (8) 279.
**Centanin, O.** See Crepaz, E.
**Chadeyron, A. A., and Rees, W. J.** Investigations on effect of addition of *ciment fondu* to fire clay, chrome, magnesite, chrome-magnesite mixtures, etc., A (2) 72; Tridymitization of silica brick, A (2) 75.
**Chadwick, G.** Materials for high pressure-high temperature steam service, A (6) 225.
**Chadwick, T. C., and Palkin, S.** Simplified precision oil manometer, A (10) 335.
**Chalamel, F.** Germ invasions in houses fought by means of vitrified and enameled products, A (5) 204; Scientific manufacture of ceramic building materials, A (5) 198.
**Chamberlain, P. R.** See Tyler, W. E.
**Chambers, G. H.** Mexican ceramic plants, A (3) 122.
**Champion, F. C., and Davy, N.** Properties of matter, B (1) 45.
**Chance, W. H.** Optical glassworks at Benediktbeuren (Germany), A (4) 138.
**Chance Bros. & Co., Ltd., and Forster, A. L.** Spinning glass thread mats, P (6) 219.
**Chantler, L. W.** Process and apparatus for producing mineral wool, P (7) 251.
**Chaplet, A.** Cretan copper, A (10) 323.
**Chapple, B.** Sheet-metal base for bathtubs *vs.* cast iron, A (1) 9.
**Charlot, G.** Quantitative separation of Fe, Al, and Cr from other members of ammonium sulfide group, A (5) 201.
**Charrin, V.** Bentonite, A (5) 196; Dolomite, A (3) 122; Generalities on clays, A (7) 261; Kaolin and refractory earths of Larnage-Doueras, A (2) 72; Observations on bauxite, A (5) 197; Pegmatite, an essentially ceramic rock, A (8) 289; Pseudokieselguhr in France, A (3) 116; Serpentine rocks in ceramics, A (8) 289; Severite, A (4) 158; Softening water by filtration, A (8) 289; Wood as fuel for industry, A (3) 113; World resources of bauxite, A (7) 263; see also C., V.
**Chassevent, L.** Fire protection of buildings and resistance to fire of building materials, A (3) 122; Hydraulicity of slags, A (3) 95.
**Chastel, G.** Stained glasses and glassworks of Saint-Just-sur-Loire, A (8) 275.
**Chelishcheva, A. G.** See Kurnakov, N. S.
**Chellson, H. C.** Combating silicosis in N. Y., A (8) 293.
**Cheltnam, C. H.** See Cheltnam, C. H. W.
**Cheltnam, C. H. W., Chelinam, C. H., and General Electric Co., Ltd.** Centrifugal apparatus for separating and collecting dust from air and gases, P (2) 79.
**Cheltnam, C. H. W., Cheltnam, C. H., Lake, W. H., and General Electric Co., Ltd.** Centrifugal apparatus for separating and collecting dust from air and gases, P (4) 153.
**Chemical Society, Faraday Society, and Physical Society Joint Committee.** Symbols of thermodynamical and physicochemical quantities and conventions relating to their use, A (2) 86.
**Chemische Forschungsges.m.b.H.** Safety glass, P (2) 68, P (8) 278; Wired-glass substitute, P (8) 279.
**Chemische Werke vorm. H. & E. Albert A.-G.** Enamels, P (5) 176.
**Chernous, G. D.** Tridymite silica brick from crystalline quartzites, A (2) 75.
**Chernyavskii, N. D.** Determining grade of cement with ultra-violet rays, A (6) 211.
**Cheron, E.** Tempering glass with air, A (10) 327.
**Chesny, H. H.** Magnesia refractories, P (6) 223.
**Chesny, H. H., and Bradley, A. L.** Manufacture of refractory materials, P (9) 309.
**Chester, A. E., Irwin, J. T., and Ellinger, C.** Electric cleaning and pickling of sheet iron prior to enameling, A (6) 212.
**Chesters, J. H.** See Jay, A. H.; Swinden, T.
**Chesters, J. H., and Lee, L.** Grading coarse refractory aggregates, A (3) 103–104; Properties of magnesite and chrome-magnesite brick, A (3) 105.
**Chevenard, P.** Applications of expansion pyrometer, A (2) 77.
**Chibunovskii, N. G.** Twenty years of brick industry of U.S.S.R, A (6) 220.
**Chicago Eye Shield Co.** Cesco respirator, A (4) 165.
**Chifrine, L.** High-temperature furnaces, P (8) 281.
**Chigrin, M. F.** Accelerated determination of Al, Fe, and Ti in silicates, A (4) 159.
**Chipman, S. G.** From open-pit to underground mining, A (1) 46.
**Chirkov, S. K.** Preparation of water glass without use of alkalis, A (3) 120.
**Chirvinskii, P. N.** Foshallasite of Chibina tundra, A (7) 261.
**Chittum, J. W.** See Grady, R. I.
**Chmutov, K. V.** Capillary condensation in artificially produced capillary and determination of thickness of adsorbed water film on glass, A (2) 84.
**Chokolov, D. S.** Determination of refractoriness, A (2) 70.
**Chormann, G. W., and Cowie, H. J.** Making abrasive teeth for stone saws, P (2) 52; Metal reinforcement for abrasive teeth, P (2) 52.
**Chrompet, Dehlinger, M., Thuile, J., Mathieu, F., *et al.*** Ancient ceramic ware in museums, A (10) 323.
**Chudoba, K.** Green color of zircon, A (6) 233; see Stackelberg, M. v.
**Chudoba, K., and Engels, A.** Influence of potash-feldspar components on optical properties of plagioclase: II, Chemical and optical properties of end-members (albite, anorthite, and microcline); III, Optical orientation of potash-bearing plagioclase, A (1) 37.
**Churchill Machine Tool Co., Ltd., and Asbridge, H. H.** Grinding wheel truing device for grinding or abrading machines, P (11) 346; Roll grinding machines, P (3) 93.
**Churchill Machine Tool Co., Ltd., and Jones, J. C.** Precision grinding machines, P (8) 268.
**Cichocki, J.** Theoretical study of latent energy of solid solutions, A (1) 44.
**Cincinnati Mfg. Co.** "Dairy bar" finished in porcelain enamel, A (1) 8.
**Cirulis, A.** See Straumanis, M.
**Clark, A. A., and Hodsman, H. J.** Viscosimeter form aterials of high viscosity, A (9) 311.
**Clark, C. L., and Brown, R. S.** Low-alloy steel for high-temperature service, A (10) 334.
**Clark, C. W. E.** Steam-power developments, A (8) 293.
**Clark, D. S., and Freeman, R. B.** Test for relative sliding wear, A (1) 2.
**Clark, F. B.** Problem of deferment in valuation of mineral properties, A (11) 364.
**Clark, G. L.** See Bradley, W. F.
**Clark, G. L., Grim, R. E., and Bradley, W. F.** Identification of minerals in clays by X-ray diffraction, A (1) 37.
**Clark, G. L., Rucken, F. F., and Reynolds, D. H.** X-ray diffraction studies of two-micron fractions of genetic soil profiles, A (1) 40.
**Clark, W.** Advances in applied photography, A (6) 224.
**Clarke, B. L., and Hermance, H. W.** Microgasometric analysis with dilatometer, A (8) 291.
**Claus, G.** See Andrée, H.
**Claussen, G. E.** Shrinkage distortions and stresses in welding, A (6) 213; see Spraragen, W.
**Clayton, W. J.** See Vosburgh, W. C.
**Clemmer, J. B.** See Dean, R. S.
**Clemmer, J. B., and Cooke, S. R. B.** Ore dressing studies: (B) Flotation of complex Mo-V ores from Ariz., B (6) 227.
**Cleve, K.** Boiler furnace combustion chamber air-inlet nozzles, A (11) 361.
**Clevenger, G. M.** Bottle design, P (5) 172.
**Clews, F. H.** Practical experiences in de-airing heavy clay goods—report on questionnaire, A (5) 193; see Rigby, G. R.
**Clews, F. H., Green, A., and Green, A. T.** Action of alkalis on refractory materials: II, Action of KCl vapor at 1000°C; III, Volatilization from alkali-impregnated refractory materials at 1000° and 1100°C, A (2) 69.
**Clews, F. H., and Green, A. T.** Experiments on grading, porosity, and permeability to air of sillimanite brick, A (3) 103; High porosity sillimanite brick: III, A (2) 71; Refractoriness-under-load test: V, Behavior of fire brick at high temperatures under increasing load, A (2) 74.
**Clews, F. H., Macey, H. H., and Rigby, G. R.** Properties of clay, A (9) 314.
**Clews, F. H., Richardson, H. M., and Green, A. T.** Action of alkalis on refractory materials: VIII, Action of alkali chloride vapor at 1000°C; IX, Action of vapor from Na aluminate and Na carbonate, A (2) 69; Jointing cements: VII, Stability of jointing materials under compression and tension at 1300°C, A (2) 55.
**Clitherow, W. B.** Tempering glass, P (9) 306.
**Clouet, H.** Modern stained glass windows, A (1) 4.
**Cobaugh, G. D.** Refractories for miscellaneous foundry furnaces—insulation, B (10) 331.
**Cobb, J. W.** See Roberts, A. L.
**Coberly, C. J.** Selection of screen openings for unconsolidated sands, A (4) 152.
**Cochrane, W.** Polish on metals, A (11) 346.
**Coghill, W. H.** See Devaney, F. D.
**Coghill, W. H., and Devaney, F. D.** Ball-mill grinding, B (7) 258.
**Cogsdill, S. A.** Machine for grinding tools, P (2) 52.
**Cohn, B. E., and Lind, S. C.** Luminescence and color excited by Ra in zinc borate glasses containing Mn, A (6) 216.
**Colbert, C. L.** Making granules, P (1) 47.
**Cole, R. A.** Calipering apparatus, P (1) 3; Grinding machine, P (1) 3; Grinding machine work loading and driving mechanism, P (9) 296; see Belden, A. G.
**Cole, R. A., and Amidon, C. H.** Grinding machine, P (2) 52.
**Coleman, E. M.** Bottle design, P (8) 271.
**Coleman, W. C., and McCrosky, C. R.** Volumetric determination of Se—critical study of Norris and Fay method, A (5) 202.
**Collari, N.** See De Carli, F.
**Collingham, E. B., and Owen, C. J. A.** Presses for molding tile, P (2) 80; Tile-fettling mechanism, P (5) 195.
**Collins, H. R.** Pulverizer mill, P (4) 153.
**Colton, H. S., and Hargrave, L. L.** Handbook of northern Arizona pottery, B (6) 210.
**Comber, A. W.** Magnesite as refractory, B (4) 146.
**Commons, C. H., Jr.** Use of Setit to improve workability and aging characteristics of sheet-iron ground coat, A (9) 300.
**Compagnie française pour l'exploitation des procédés Thomson-Houston.** Transparent vitreous compositions, P (8) 279; see Compagnie des lampes.
**Compagnie des lampes and Compagnie française pour l'exploitation des procédés Thomson-Houston.** Vitreous compositions for electric discharge lamps containing metal vapors, P (8) 272.
**Compagnie des Meules Norton (Soc. Anon.).** Abrasive articles, P (10) 321; Agglomerated granular material, P (8) 268; Boron carbide, P (11) 346; Ceramic objects, P (5) 189; Grinding wheel, P (11) 346; Metal carbides, P (6) 209; Refractory materials, P (5) 190.
**Compton, K. T.** Contributions of Mellon Institute to science, A (10) 343; Forecast of technological education, A (10) 344; Science in American program for social progress, A (10) 344.
**Compton, K. T., Sullivan, E. C., Jeffries, Z., Adams, E. Q., Foote, P. D., Van Hartog, J. P., Burchard, J. E., Buckley, O. E., Millikan, C. B., Slepian, J., Dodge, H. L., and Olpin, A. R.** Physics in industry, B (6) 232.
**Comstock, G. J.** Producing hard cemented carbide composites, P (5) 171; Types of metal powder products—classification, A (11) 360.
**Comstock, H.** Antiques exposition in N. Y., A (9) 296; Chinese art of Ming and Ch'ing periods, A (8) 269; Exhibition of stained glass, A (5) 171; Lorimer glass exhibition, A (8) 269; Ming porcelain and underglaze *rouge-de-fer*, A (4) 130; New galleries for Parish-Watson, A (7) 243; Porcelain garniture from Vincennes, A (7) 243; Rare pair of Whieldon brackets, A (8) 269; Russian collection, A (8) 269;

Russian enamels, A (8) 270; Sung figurine of rare type, A (8) 270; Waugh's designs for Steuben glass, A (6) 210; Worcester pastille burners with English views, A (6) 210.

**Condon, R. S.** See Bullock, E. W.

**Coneen, J. F.** Burnishing procedure for Al screw machine products, A (1) 1.

**Connick, C. J.** Stained glass craft—light and color, B (3) 93.

**Connor, E. B.** See Natelson, S.

**Connor, K. W.** Honing tool and its use, P (3) 92; Method of honing, P (4) 128; Unit abrading element, P (4) 128.

**Connor, K. W., and Bleasdale, A.** Adjusting means for honing tools, P (7) 241.

**Connor, M. H.** Canister design, P (1) 5; Tray design, P (9) 298.

**Conti, M.** Chemical physics of glass, A (5) 176.

**Continental Industrial Engineers, Inc.** Automatic glazing machine for glass products, A (3) 109.

**Conway, M. J.** Automatically controlled heating furnace increases metallic yield 1%, A (10) 336; Refractories for power boiler furnaces, A (2) 74.

**Cook, A. M.** Press for molding shaped articles, P (3) 112.

**Cooke, G. J.** See Heindl, R. A.

**Cooke, R. D.** Acid-resisting vitreous enamels, P (1) 10.

**Cooke, S. R. B.** Ore dressing studies: (C) Short-column hydraulic elutriator for subsieve sizes, B (6) 227; see Clemmer, J. B.; Dean, R. S.; Devaney, F. D.

**Cooney, L. J.** Method and apparatus for grinding, P (1) 4.

**Cooper, B. S.** Application of spectrographic methods to glass analysis, A (1) 41.

**Cooper, C. G.** Ceramics in federal art project of Ohio, A (9) 296.

**Cooper, G.** See Vosburgh, W. C.

**Cooper, H. M.** See Abernethy, R. F.

**Cooper, J.** Clay handling, A (2) 78; Insulation properties of glass fiber, A (9) 304.

**Cooper-Bessemer Corp.** Modern gas producers reflect advances in design and operation, A (2) 81.

**Coordes, H. G.** Sheet metal bathtub, P (9) 301.

**Coppock, J. B. M.** See Cumbers, C. F.

**Cordy, I.** Jar design, P (1) 5.

**Corhart Refractories Co.** Core for mold in which refractory material is cast, P (1) 24; Glass furnace, P (7) 250.

**Corkill, F. W.** Treating hydrous borate minerals, P (1) 45.

**Corn, E. R.** See Johns, E., & Co., Ltd.

**Corning Glass Works.** Apparatus for making glass tubes or cylinders, P (8) 276; Apparatus for tempering glass, P (4) 140, P (5) 182; Artificial dentures, P (9) 305; Bulb for luminous discharge lamps, P (2) 67; Chilling baths for tempering glass, P (4) 140; Coffee makers, P (4) 140; Dental plates, P (5) 182; Glass, P (8) 277; Glass building units, P (2) 68; Glass insulators, P (3) 102, P (6) 218; Hardening glass objects, P (10) 328; Making and joining glass building blocks, P (8) 278; Making tempered articles of lime-soda glass, P (4) 141; Manufacture of tempered-glass articles, P (4) 141; Method of stabilizing annealed glass articles (thermometers), P (5) 183; Process and apparatus for making glass cylinders or tubing, P (1) 17; Refractory products, P (11) 358; Stabilizing glass articles, P (6) 219; Tempered glass articles, P (5) 184; Thermal treatment of glass, P (8) 279.

**Corrall, H., and Stevens, B. A.** Honing device, P (10) 322.

**Cosgrave, W. J. G., and Electric Resistance Furnace Co., Ltd.** Temperature responsive devices, P (10) 338.

**Coss, H. T.** Italian bentonite, A (1) 37; Mineral wool composition, P (7) 251.

**Cottrell, F. G.** Gas purification, P (6) 229.

**Coubray, E.** Means for automatically weighing predetermined quantities of discrete materials, P (2) 80.

**Couchman, C. E., and Scholze, W. H.** Modified cell for dust counting, A (9) 310.

**Coulfield, T. H.** See Hay, R.

**Coulhon, A.** Manufacture of salt-glazed stoneware pipes and fittings, A (1) 17, A (1) 25, A (2) 76, A (5) 191; Structure of mixes obtained by means of drawing and de-aired mixes, A (3) 123.

**Coulson, A. L.** Testing wear of road metals and aggregates, A (4) 142.

**Coulter, H. B.** Classifier, P (4) 153.

**Coulter, V. A.** See Morse, W. C.

**Coulton, G. G.** See Aubert, M.

**Council for Art and Industry.** Design in pottery industry, B (2) 54.

**Coupe, J. H.** Design of sheet and cast-iron parts for vitreous enameling, A (3) 96.

**Courtney, R. P.** Abrasive article, P (10) 321.

**Cousen, A.** Bursting pressure test on glass bottles, A (9) 301; Critical examination of standard test for chemical durability of glass bottles, A (4) 137.

**Coussement, H. P., and Cappette, F.** Grinding instrument for dental work, P (5) 170.

**Cousteix, B.** Electrical furnace, P (6) 217.

**Coutant, J. G.** Hydraulic refractories and development, A (4) 143; Reanalysis of refractory heat loss on basis of heat capacity, A (4) 143; Savings with insulating refractories, A (4) 145.

**Coutts, J. R. H.** "Single value" soil properties—significance of soil constants: VIII, Relationships between sticky point and nature of exchangeable ions in soil, A (6) 231.

**Coutts, M. C.** Design of metal parts for porcelain enameling, A (1) 8.

**Cover, H. S., Co.** Dupor plate respirator, A (4) 150.

**Cowie, H. J.** See Chormann, G. W.

**Cox, W. F.** Flashing block, P (6) 220.

**Craft, B. C., Johnson, T. J., and Kirkpatrick, H. L.** Effects of temperature, pressure, and water-cement ratio on setting time and strength of cement, A (3) 94.

**Crago, A.** Differential concentration of nonmetallic minerals, P (3) 117.

**Craig, J. W.** High-temperature laboratory kiln, A (1) 33; Manufacturing magnesitic brick in Canada, A (9) 307.

**Cramer, C. G.** Spark plug, P (6) 224.

**Cramer, R. H.** Grinding machine, P (5) 170.

**Cramer, T. M.** Production of KCl in N. Mex., A (10) 340.

**Crandell, J. S.** Report of Project Committee on fillers and cushion courses for brick and block pavements, A (9) 307.

**Crane, A.** Plate design, P (2) 54.

**Crawford, W. R.** See Lewis, H. F.

**Creamer, A. S.** See Geller, R. F.

**Crepaz, E., and Centanin, O.** Possible utilization of primitive trachyte in ceramic industry, A (10) 340.

**Crespin, D.** See Gilard, P.

**Criner, H. J.** Grinder, P (4) 128.

**Critchett, J. H.** Report of Subcommittee on Welding of Low-Alloy Steels, A (5) 174.

**Crocker, P. B.** Electric furnace, P (10) 337.

**Crombie, G., Sr.** Fire-wall construction, P (4) 142.

**Crompton, G., Jr., and Green, C. J.** Grinding machine, P (2) 52.

**Crook, W. J.** Method for photographing petrographic thin sections at low magnifications, A (5) 193.

**Crosby, V. A.** See Parke, R. M.

**Cruse, K., and Schubert, H.** Quantitative spectroscopic determination of lead in blood, A (3) 120.

**Csordas, I.** Native raw materials for ceramic industry, A (7) 262.

**Čtyroký, V.** Electric melting furnaces in glass industry, A (2) 61; Importance of rare earths for glass industry, A (8) 274; Influence of rare earths on ultra-violet light absorption of glass—color changeability, A (11) 350; Spun glass, its properties and uses, A (9) 304.

**Čtyroký, V., and Fanderlik, M.** Czechoslovak protective glasses for goggles, A (8) 272; Czechoslovak signal glasses, A (8) 273; Heat-absorbing glasses, A (8) 274; Specifications for lead glasses in Czechoslovakia, A (8) 275; Ultra-violet light transmission of sheet glass, A (11) 351.

**Cubbon, J. F.** See Dean, H.

**Cudworth, J. R.** See Hertzog, E. S.

**Cudworth, J. R., and Hertzog, E. S.** Dewatering and drying of coal, B (10) 337.

**Cumbers, C. F., and Coppock, J. B. M.** Dipotassium sodium cobaltinitrite—application to gravimetric determination of Co, A (9) 316.

**Cummings, D. E.** Control of silicosis in mining, A (8) 293.

**Cunningham, A. J.** Goblet design, P (2) 54, P (9) 298.

**Curtis, A. L.** Borax, boric acid, and less-known applications, A (1) 41.

**Curtis, F. W.** Cutter grinder, P (8) 268.

**Curtis, H. A.** Making calcium metaphosphate, P (6) 235.

**Curtis, H. A., Miller, A. M., and Newton, R. H.** Phosphate smelting, A (9) 308.

**Curtis, T. S.** Synthetic corundum refractory, P (8) 282.

**Cyrex, F. G.** Polishing wheel, P (3) 93.

**Czajko, L.** Manufacture of brick, P (11) 353.

**Czech, J., and Kieffer, E.** Testing susceptibility of porcelain glazes to "smoking," A (3) 109.

**Czolgos, E. P.** See Sirovy, G.

**D., A.** Manufacture of pottery, A (3) 109.

**D., M.** Electric furnaces in ceramics, A (5) 195; French studies on clay (1937), A (8) 288.

**D., M. B.** Early American wineglasses, A (2) 53.

**D., R. W.** Efficiency of electric furnace, A (1) 32.

**Dahl, A. I.** See Roeser, W. F.

**Dahl, O.** Ceramic floor tile, A (6) 223; Testing and working clays, A (11) 360.

**Dailey, R. C.** Gas burner, P (7) 261.

**Dalla Valle, J. M.** Comparative tests with Hatch and Greenburg-Smith impingers, A (9) 309.

**Dallas, R. H.** Glass jar design, P (5) 172.

**Dam, H. van.** Progress in gas analysis, A (5) 201.

**Dambier, H.** Production of Al mirrors by evaporating metal in vacuum, A (4) 139.

**Damour, E.** Course in glassmaking: I, Chemistry; II, Thermal physics; III, Annealing glass, its working—physical properties of cold glass, B (3) 101.

**Danforth, G. L., Jr.** Checker-brick construction, P (5) 189.

**D'Angelo, N.** Canadian guild of potters, A (9) 296.

**Daniel, W.** See Mueller-Cunradi, M.

**Daniels, R. S.** Resin-bonded article, P (10) 322.

**Danigrand, J.** Belgian majolica, A (2) 53; Saint Gobain and International Exhibition of Paris, A (2) 65.

**Danner, H.** See Fortuna-Werke Spezialmaschinenfabrik, A.-G.

**Darlington, C. J.** Semiworks of E. I. du Pont de Nemours & Co., A (2) 89.

**Darrah, W. A.** Special atmospheres for industrial furnaces, A (9) 312.

**Darrow, K. K.** Contemporary advances in physics: XXX, Theory of magnetism, A (4) 160; Renaissance of physics, B (4) 164.

**Das, S. R., and Saboor, M. A.** Purification of clay, B (7) 263.

**Davenport, S. J.** See Harrington, D.

**David, W. T.** Temperature of open flames, A (11) 362.

**Davidson, C. F.** Fire clays in Scotland, A (6) 230; Ganister in Scotland, A (6) 230; Oil shale, A (6) 230.

**Davidson, M.** American 18th Century presentation goblet, A (2) 53; Early American blown glass, A (9) 296.

**Davidson, N.** Building block and construction, P (3) 103.

**Davidson, W. T.** Welding alloy steels, A (3) 98.

**Davies, R. J.** See English Clays, Lovering, Pochin & Co., Ltd.

**Davies, R. J., Green, R. A., and Donnelly, H. F. E.** Researches on china clay, A (2) 83.

**Davies, R. L.** Making alkali subsilicates, P (2) 87.

**Davis, A. E.** See Johnson, B. L.; Tyler, P. M.

**Davis, C. E.** See British Thomson-Houston Co., Ltd.

**Davis, C. T.** Apparatus for abrading strand material, P (3) 92.

**Davis, C. W.** See Dean, R. S.

**Davis, C. W., and Bernewitz, M. W. von.** Laboratories that make assays, analyses, and tests on ores, minerals, etc., B (8) 294.

**Davis, F. A. W.** See Rankin, H. S.

**Davis, H. T.** See Stuckey, J. L.

**Davis, H. W.** Fluorspar and cryolite, B (9) 315; see Hatmaker, P.

**Davis, L.** Decalcomania paper, P (1) 5, P (3) 93.

**Davis, L. S.** See Spencer, H. W.

**Davis, N. B.** Nepheline syenites of Ontario, A (1) 38.

**Davison, E. H.** Field tests for minerals, B (4) 159, B (11) 364; Occurrence and preparation of china clay A (8) 289.

**Davy, N.** See Champion, F. C.

**Davydov, A. L.** See Zan'ko, A. M.

**Day, O. L.** Refractories—types, uses, and unit costs, A (1) 22.

**Dean, H.** Clay-feeding mechanism for ma-

chines for making stoneware pipes, etc., P (10) 332.
**Dean, H., and Cubbon, J. F.** Brick, building blocks, etc., P (6) 220.
**Dean, R. S.** Annual report of Metallurgical Division—progress report No. 20, B (5) 175; Physicochemical nature of metallic interfaces, B (11) 365.
**Dean, R. S., Clemmer, J. B., and Cooke, S. R. B.** Ore dressing studies: (A) Use of wetting agents in flotation, B (6) 227.
**Dean, R. S., and Davis, C. W.** Physical properties of magnetite—use as industrial mineral, A (1) 21.
**Debenham, W. S.** See Parmelee, C. W.
**Debye, P.** Evaluation of sedimentation tests, A (5) 193.
**De Carli, F., and Collari, N.** Refractory products containing silica and alumina from Italian raw materials, A (8) 281.
**De Carli, F., and Passarini, U.** Clay and kaolin of Piedmont (Italy), A (2) 82.
**Deckel, F.** Cutter grinding machine, P (4) 128; Grinding cam shafts, P (6) 208.
**Degea, A.-G.** Protective glass, P (8) 278.
**De Graaf, J. E.** Examination of macrostructure of materials and products with X-rays: I–II, A (3) 118; V, A (11) 360.
**Deguide, H.** Polishing composition, P (10) 322.
**Dehlinger, M.** See Chrompet.
**Dehn, F. B.** Abrasive disks, P (11) 346; Froth-flotation concentration of ores, P (2) 80; Treating material by heat, P (2) 80.
**Delacuvellerie, E.** Glass-drawing apparatus, P (1) 15.
**Delafon, S. G.** Ceramics and glass, A (8) 269; Ingrand, glass decorator and enameler, A (8) 269.
**Delamere, R. D., and Hutcheon, W. M.** Viscosimeter, P (6) 227.
**Delattre, M.** Spark plugs for internal-combustion engines, P (5) 192.
**DeLeeuw, A. L.** Grinding machine, P (2) 52.
**Delpech, G.** See George, H.
**Delwaulle, M.-L.** See François, F.
**Delyannis, A. A., and Alexopoulos, K.** Crystalline structure and decomposability of Greek bauxite, A (11) 363.
**Dem.** Constitution of clays, A (11) 363.
**De Marchi, A., and Sandin, D. A.** Surface grinder, P (1) 4.
**Demkina, L.** Instrument for controlling decoloration of glass, A (1) 12.
**Dempsey, H. W.** Abrading apparatus, P (8) 268; Abrading wheel sheet and sheet holder, P (7) 240.
**Demyb, L.** Mo in ceramic industry, A (1) 38.
**Denelsbeck, D.** Apparatus for marking articles, P (5) 194, P (6) 217.
**Den Hartog, J. P.** See Compton, K. T.
**Denninger, E.** Effect of different clays on physical properties of grinding wheels, A (2) 51.
**Dennis, C.** See Howard, E. J.
**Dennison, B. J.** Safety glass manufacture, P (10) 328; see Sherts, J. H.
**Dennison, R. L.** Metal spraying—fundamentals and applications, A (6) 226.
**Denny, J. J., Robson, W. D., and Irwin, D. A.** Al as aid in reducing silicosis, A (1) 46.
**Densem, N. E.** Determination of iron in glass, A (1) 11.
**Department of Scientific and Industrial Research.** Report of Building Research Board (1936), B (9) 319; Report of Fuel Research Board (March 31, 1936)—Report of Director, B (3) 114.
**Déribéré, M.** Application of "Wood's light" in ceramic industry, A (4) 159; Present-day scientific knowledge in service of ceramic industry, A (5) 197.
**Derr, R. B., and Stere, H. B.** Alumina production, P (11) 357.
**Descarsin, M.** Furnace for manufacturing tubes of glass, P (2) 67.
**Deshalit, G. I.** Effect of coke gas and water steam on refractories of coke chambers at high temperature, A (6) 221.
**Detrick, M. H., Co., Ltd.** Building suspended arches and walls for furnaces and kilns and refractory block or tile therefor, P (4) 154; Suspended arches for combustion chambers, A (3) 105.
**Dettmer, F.** Experiences with tunnel kilns with short firing schedules, A (3) 112; Possibilities of development in construction of ceramic kilns, A (1) 34.
**Deutsch, L.** Determination of tin in ores and metallurgical drosses by 0.1 *N* $KBrO_3$, A (4) 161.
**Deutsch, V.** See Paić, M.
**Deutschbein, O.** See Thomaschek, R.
**Deutsche Flaschenverkaufs, G.m.b.H.** Production of milk bottles, A (8) 275.
**Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler.** Ceramic coloring matters, P (8) 270; Colors for ceramics, P (7) 244; Obtaining compounds of Be, Mg, etc., practically free of Fe, P (9) 317; Producing abrasive or polishing wheels permeated with artificially produced hollow spaces by using artificial resin and abrasive particles, P (11) 347; Production of ceramic coloring matters, P (9) 317; Ruby glass, P (5) 183.
**Deutsche Norton-Ges.m.b.H.** Abrasive wheels, P (5) 169.
**Deutsche Tafelglas, A.-G. (Detag).** Drawing sheet glass, P (11) 352.
**Deutscher Verband der Flaschenfabriken G.m.b.H.** Suction forming machines, P (8) 278.
**Devaney, F. D.** See Coghill, W. H.
**Devaney, F. D., and Coghill, W. H.** Relation of ball wear to power in grinding, A (1) 30.
**Devaney, F. D., and Cooke, S. R. B.** Flotation of langbeinite from potash field of N. Mex. and Tex., B (4) 159.
**Dévé, C.** Five theorems on mechanical surfacing, A (4) 127.
**Devillers, R. W., and Vaerewyck, F. E.** Glass tank furnaces, B (1) 15.
**De Vout, A. W.** Drying tunnel, P (8) 286.
**Dewey & Almy, Ltd.** Closures of glass jars, P (4) 140.
**Dexel, W.** Historical glassware, A (2) 63.
**Diamond, G. S.** Kiln furniture, P (8) 287.
**Dichter, J.** Automatic machine for manufacturing ampullas from glass tubes, P (5) 182; Glass vessel-producing apparatus, P (6) 218; Machine for manufacture of ampullas, P (4) 141; Machine for producing glass vessels from tubing, P (2) 68; Method and apparatus for making double-walled glass vessels, P (2) 68; Production of glass receptacles with wide bodies and tubular necks (ampoules), P (10) 328; Production of screw-mouth double-walled vessels, P (7) 251.
**Dickey, H. R.** Screening of slip and use of Co stain, A (1) 26.
**Didier-Werke, A.-G.** Means for drying large ceramic articles, P (8) 286; Repairing glassmelting furnaces, P (8) 278.
**Dierker, A. H., and Everhart, J. O.** Wearing properties of metals in clay-plant operation: I, Pug-mill knives, muller tires, runner plates, and screen plates, B (8) 286.
**Dietert, H. W., Co.** Clay washer, A (10) 334.
**Dietrich, F.** Firing porcelain circular furnaces with bituminous coal gas, A (8) 287.
**Dietzel, A.** Acid-resisting enamels, A (6) 212; Determination of small quantities of iron oxide in raw materials and glass, A (1) 11; Enameled cast-iron distilling apparatus, A (6) 213; "Mineral spar" for enamel industry, A (3) 97; Spectrum analyses in investigation of glasses and raw materials: (B) Examples of use in glass technology, A (6) 217; Theory of decolorizing with Se, A (8) 276.
**Dietzold, R. L.** Isograph—mechanical root-finder, A (4) 150.
**Digby, A.** Pottery from Abyssinia, A (4) 130.
**Dike, P. H.** See Marsh, K.
**Dimand, M. S.** Syrian glass vase, A (2) 54.
**Dimbleby, V.** See Cauwood, J. D.
**Dinzl, R. W.** Briquetting machine, P (5) 194.
**Dittler, E., and Kuhn, O.** Bauxite from Dreistätten in Lower Austria, A (7) 261.
**Dixon, H.** Heat-resisting alloy castings, A (6) 225.
**Doak, J. H.** Spark plug, P (1) 27.
**Doan, D. J.** Effect of lattice discontinuities on magnetic properties of magnetite, B (11) 365.
**Doan, G. E.** Metal deposition in arc welding, A (5) 174.
**Doan, G. E., and Bounds, A. M.** Arc-welding atmospheres, A (10) 324.
**Dobbs, F. S. W., and Anderton, J.** Dust-laden air treating apparatus, P (10) 336.
**Docking, A.** Refractory brick or radiant for surface combustion burners, P (9) 309.
**Dodd, A. E.** Evaluation of plasticity, A (4) 165; Permanent expansion of silica brick: I, Experiments according to standard methods; II, Permanent expansion against compressive force, A (3) 104–105; Refractoriness under load of chrome-magnesite brick, A (4) 144; Results obtained with chrome-magnesite brick in open-hearth steel furnaces, A (5) 188; Selection of chrome ores for steel furnaces, A (6) 222; Texture, A (4) 145; Warming up open-hearth furnaces, A (1) 23.
**Dodge, H. L.** See Compton, K. T.
**Doerner, H. A.** Chemistry of anhydrous chlorides of Cr—thermodynamic investigation, B (1) 40.
**Doerner, H. A., and Harris, D. L.** Concentration of low-grade magnesite ores by flotation, B (11) 364.
**Dolbear, S. H.** (editor). Industrial minerals and rocks (nonmetallics other than fuels), B (5) 199, B (11) 364.
**Dolinskil, P. I.** Determining moisture content in refractory materials, etc., by distillation method, A (5) 200.
**Dollar, A. T. J.** Integrating micrometer for geometrical analysis of rocks, A (1) 29.
**Dolley, P. T.** Production of borax, P (3) 121.
**Domnich, K. M.** Plating porcelain insulators by Schoop method, A (3) 109.
**Donaldson, A. R.** See Briggs, C. W.
**Donath, K.** Important machines and tools for utmost finishing, A (10) 321.
**Donnay, J. D. H.** Small set of grids for determining nonopaque minerals, A (5) 193.
**Donnelly, H. F. E.** See Davies, R. J.
**Donoho, C. K., and MacKenzie, J. T.** Effect of fluxes on cupola linings, A (10) 330.
**Donovan, J. F., and Malloy, F. J.** Apparatus for sealing metal to glass, P (9) 305.
**Donovan, W.** Zinc in glazed earthenware, A (2) 77.
**Doppler, P.** Device for sharpening knives, scissors, etc., P (4) 128.
**Dore, W. H.** See Kelley, W. P.
**Dorman, E. P.** See Moorshead, T. C.
**Dormeyer, A. F., Mfg. Co.** Heatproof china bowls in kitchen mixers, A (10) 332.
**Dorn, A.** Bohemian hollow glass, A (9) 296; Hollow glass decoration, A (11) 350; We work glass, A (9) 297.
**Dorn, J. E., and Harder, O. E.** Theory of diffusion in solids, A (6) 234, A (11) 366.
**Dorogov, S. M.** Electrical furnace with ceramic Silit resistance, A (2) 80.
**Dorren, J.** See Freling, L.
**Dorris, J. E., Frondel, C., Güssow, W. C., Lopez, V. M., Lord, C. S., Parrish, W., and Shimer, J. A.** Atomic packing models of common silicate structures, A (5) 199.
**Doskočil, J.** Walling-up boilers and chambers for firing with coal dust, A (7) 255.
**Douglas, R. W.** Thermal endurance of glass articles A (4) 139.
**Douglas, T. B.** See Tyler, W. E.
**Dove, A. B.** A.-c. electropickling, A (9) 299.
**Dovgopol, V. J.** Economic importance of blast-furnace fusion of Ural ferruginous bauxites, A (2) 70.
**Downes, G. H.** Pressure cleaning, A (4) 151.
**Downing, J. G.** Industrial dermatoses—treatment and legal aspects—recent literature, A (2) 89.
**Downs, J.** English pottery, A (9) 297.
**Doyne, H. C.** Tropical soils—increase of acidity with depth, A (6) 231.
**Drabelle, J. M.** Requirements for an engineer, A (7) 266.
**Draeger, K.** Porcelain instead of metal, A (11) 358.
**Drahonovsky, J.** Present-day glass decoration by engraving, etching, and sandblasting, A (1) 13.
**Drake, C. A., and Olsen, H. D.** Technique of testing, A (7) 266.
**Drake, J. L.** Glass-tempering apparatus, P (4) 140, P (5) 183.
**Dravo-Doyle Co.** Direct-fired heater and exhaust fan removes vapor from pickling room, A (1) 8.
**Drazhnikova, A. V.** See Kortt, E. O.; Tabakov, Z. Ya.
**Drazhnikova, L. V.** See Smelyanskiĭ, I. S.
**Dreblow, E. S.** See Twyman, F.
**Dreher, T. B.** Firing brick, P (4) 154.
**Drescher, T. B.** Marking polished glass articles, P (1) 16.
**Dressler, P.** Application of recirculating gas tube firing system to continuous decorating kilns, A (1) 32.
**Drew, T. B., Hottel, H. C., and McAdams, W. H.** Heat transmission, A (6) 221.
**Drewes, W.** Manufacture of colored paving material for athletic and pleasure grounds, P (8) 282.
**Drewry, M. K.** Preventing spontaneous heating of large coal piles, A (6) 228.
**Drexel, E.** Chemical analysis of refrac-

tory clays and rapid method to determine their rational composition, A (10) 342.
**Dreyfus, H.** Manufacture and application of $TiO_2$ products, P (2) 81; Manufacture of hydrocarbon gases from coal, P (8) 287.
**Drill, D. C., Whitenack, C. L., and Gregory, J. H.** Applying binding materials, P (10) 327.
**Drinker, P.** See Tourangeau, F. J.
**Drinker, P., and Hatch, T.** Industrial dust, B (4) 166.
**Drögsler, O.** Determination of water absorption of brick, A (9) 306; Effect of freezing test on strength of brick, A (5) 184.
**Drummond, R. S.** Lapping machine, P (5) 170.
**Drummond, T. W.** See Reimer, J. J.
**Dube, V. S., Rane, M. B., and Kanakaratnam, M.** Preparation of alumina and sulfur dioxide from bauxite-gypsum mixtures, A (1) 21.
**Dubilier, W., and Oppenheimer, J.** Ceramic dielectric material, P (11) 359.
**Dubinskii, A. P.** Determination of Fe and Mn in silicates (slags, ores) from one sample, A (2) 84.
**Dubinskii, A. P., Zaikin, L. S., and Ponomarev, V. D.** Analysis of open-hearth slags, A (9) 315.
**Dubovitzkaya, V. G.** See Grigor'ev, P. N.
**Dubrul, L.** See Gilard, P.
**Duclaux, J., and Amat, M.** Ultrafilters of SiC, A (1) 44.
**Dudding, B. P.** Glass in modern life: V, Lighting industry (1916–1937), A (9) 303.
**Dudek, W., Lehnigk, K., and Popella, H.** Method and apparatus for producing hollow glass bodies, P (10) 328.
**Duecker, W. W.** Hocking County experimental road, A (6) 220.
**Duecker, W. W., and Schofield, H. Z.** Results from use of plasticized sulfur as jointing material for clay products, A (1) 18.
**Duffield, F. L.** Manufacture of brick, blocks, etc., from materials typifiable by dolomite, P (4) 146.
**Dufton, A. F.** Computation of strength of windows, A (11) 349.
**Duguid, J.** Monolithic furnace construction, A (7) 253.
**Duldner, K., and Wadelka, R.** Frosting glass articles, P (5) 182.
**Dumore Co.** Handy grind catalogue, B (9) 295.
**Dunagan, W. M.** Color analysis of Portland cement concrete, B (8) 286.
**Dunbar, H. W.** Grinding and lapping machine, P (10) 322.
**Dunbeck, N. J.** Composition, P (11) 353.
**Duncombe, G. H.** See Carter, W. K.
**Dunford, E.** Sanding wheel, P (4) 128.
**Dunham, K. C.** Paragenesis and color of fluorite in English Pennines, A (1) 38.
**Dunn, G.** Engineering profession, A (3) 122.
**Dunn, J. S.** Ca sulfate plasters, A (9) 298.
**Dunn, W. E., Mfg. Co.** Automatic machine mold tamps 1920 brick per hour, A (1) 27.
**Düpmann.** Unfritted leadless glaze, A (2) 54.
**Durex Corp.** Surfacing machines and abrasive drums for use therein, P (2) 52.
**Duval, C.** Hydroxides of Co, A (3) 119.
**Dwyer, F. P.** Cadmium spot tests, A (5) 199.
**Dyachkov, V. D.** Interaction of sodium aluminate and silicate solutions, A (4) 162.
**Dyer, H. I., and Hedlund, O. J. W.** Machine tool, P (5) 170.
**Dyuko, T. M.** See Toropov, N. A.
**Dziallas, R.** Centrifugal pumps for sludge and waste water, A (5) 192.

**Eardley, D.** Manufacture of bone china, A (1) 26.
**Easter, G. J.** See Benner, R. C.
**Eastman, L. R.** Efficiency in polishing and buffing room, A (7) 239.
**Eaton, S.** Apparatus for automatically delivering predetermined quantities of pulverulent or granular material, P (7) 259.
**Eberle, A. R.** See McBurney, J. W.
**Eberlin, L. W.** Optical glass, P (1) 16.
**Ebert, E. A.** See Popp, W. H.
**Ebert, H.** Progress in vacuum technique, A (2) 79.
**Eckert, F.** Compound safety glass, P (9) 305; Hardening glass, P (7) 250; Tempering glass, P (9) 306.
**Edelman, C. H.** Clay minerals, A (7) 261; Relations between crystal structure and base-exchange capacity of minerals, A (11) 364.
**Eden, F. S.** Medieval heraldry in painted glass, A (11) 347.
**Edmister, W. C.** Thermodynamic properties of hydrocarbons, A (8) 287.
**Edwards, A.** Clay-bonded silica refractories in segmental horizontal retorts, A (2) 70.
**Edwards, A. E.** Manufacture of fibers from glass, P (6) 218.
**Edwards, A. E., and Otto, C. E.** Microrefractometer of simple design, A (10) 334.
**Edwards, A. L.** American vitreous enameling practice, A (10) 324.
**Edwards, E. W.** See Gibbons Bros., Ltd.
**Edwards, R. S.** Abrasive polishing materials, P (7) 241.
**Eells, H. P., Jr.** Production of refractories, P (3) 107.
**Eells, H. P., Jr., and Barrett, H. N.** Glass batch, P (8) 277.
**Efremov, G. L., and Krasnyanskaya, V. M.** Effect of glazes containing CaO on shrinkage of porcelain, A (7) 257.
**Egger, W. F.** Lapping machine, P (9) 296.
**Eggert, J.** Photographic principles of material testing with X-rays, A (11) 366.
**Egloff, G.** See Thomas, C. L.
**Egloff, G., and Nelson, E. F.** Cracking process, A (6) 221.
**Ehlers, G.** Pipes of hard porcelain, A (4) 148.
**Ehrhardt, A.** Sanitary basin, P (7) 257.
**Eichler, E. R.** Enamel and glaze, P (5) 176.
**Eichler, M.** Shearing strength of glass rods, A (2) 65.
**Eichstaedt, T. C.** Finishing gray and malleable iron, steel, steel forgings, and Ni or Cr alloys, A (7) 239; Polishing cast brass, bronze, Cu, and Al, A (7) 240.
**Eicke.** Economic organization in ceramic industry, A (2) 88.
**Eiff, W. von.** Glass decoration in Germany, A (8) 269; Improvement of glass, A (8) 269.
**Eiger, A.** Determination of degree of hydration of cements, A (5) 173.
**Eipper, D. C.** See Hunt, W. P.
**Eirich, F., and Goldschmidt, A.** Viscosities of suspensions and solutions: VIII, Inertia effects of suspended spheres, A (8) 285.
**Eisenwerk Kaiserslautern.** See I. G. Farbenindustrie, A.-G.
**Eisner, A.** See Fisher, C. H.
**Eisner, F.** Manufacture of abrading or cutting tools of hard metal, P (5) 170.
**Eitel, W.** Properties of silicate glasses compared with transparent synthetic materials, A (5) 180; Sillimanite-mullite problem, A (1) 44.
**Eitel, W., and Oberlies, F.** Properties of glass fibers, A (5) 180.
**Elchardus, E.** Surface tensions of molten mixtures with cryolite base, A (9) 317.
**Eldridge, H. B., and Klein, C. E.** Machine for grinding clutch facings, P (9) 296.
**Electric Furnace Co.** Means for heating furnaces, P (9) 312.
**Electric Resistance Furnace Co., Ltd.** See Cosgrove, W. J. G.
**Electric Smelting & Aluminum Co.** Obtaining $Al_2O_3$ from siliceous material, P (9) 309; Treatment of aluminous siliceous material, P (8) 294.
**Elek, A.** Microdetermination of C and H, A (5) 201.
**Elektro-Osmose.** Safety glass, P (3) 102.
**Elias, N. M.** Vacuum jacketed glass tube and shape, P (8) 279.
**Elinzon, M. P.** See Mamurovskii, A. A.
**Elledge, H. G., and Hirsch, A.** Method of producing $SrCO_3$, P (3) 121.
**Ellefson, B. S., and Taylor, N. W.** Surface properties of fused salts and glasses: I, Sessile-drop method for determining surface tension and density of viscous liquids at high temperatures; II, Contact angle and work of adhesion on Au and Pt in various atmospheres, A (7) 249.
**Ellerton, H.** See Hugill, W.
**Ellestad, R. B.** See Bowen, N. L.
**Ellinger, C.** See Chester, A. E.
**Elliott, A. C., and Montgomery, R. J.** New type of thermal shock, A (1) 20.
**Elliott, N.** Quality in china, A (2) 77.
**Ellis, C.** Glass fabric road, P (7) 250.
**Ellis, G. H.** Microdetermination of calcium, A (8) 291.
**Ellis, G. H. S.** Tile- and brick-making machines, P (4) 153.
**Ellis, L. S. E.** Device for adjusting grinding disk of gear-grinding machines, P (6) 208.
**Ellison, R. W.** Rapid method for determining silica in clays, A (3) 120.
**Elving, P. J.** See Caley, E. R.
**Elving, P. J., and Caley, E. R.** Separation of Mg as oxalate by precipitation in concentrated acetic acid solution, A (8) 292.
**Emerson, R. F.** Multimotor drives, A (10) 335.
**Emery, A. H.** See Fieldner, A. C.
**Emicke, O., and Benad, H.** Fundamental conditions for proper working of roll-grinding machines for cold rolling mills, A (6) 207.
**Endell, K.** Ceramic industry in central Brazil, A (1) 46; see Heidtkamp, G.
**Endell, K., and Wens, C.** Temperature-viscosity relationships of coal slags: I, Methods of investigation and results, A (5) 202.
**Endrédy, A. von.** Density of aqueous boric acid solutions and apparent molecular volume of $H_3BO_3$ in them, A (2) 84.
**Enge, C. C.** Sanding block, P (1) 4.
**Engels, A.** Chemical composition of albite from Schmirn (Tyrol) as plagioclase end-member, A (1) 35; see Chudoba, K.
**Engels, B.** Feeding molten glass, P (9) 305; Molding hollow bodies of glass, P (10) 328.
**Engels, W.** Automatic sanding machines, A (11) 352.
**Engl, J.** Dispersion of crystalline and fused quartz, A (4) 161.
**Englert, R., and Becker, F.** Production of alumina, P (11) 358.
**English Clays, Lovering, Pochin & Co., Ltd., and Davies, R. J.** Treatment of clay, P (1) 41.
**Ermakov, L. I.** Influence of fineness of grind of gypsum on quality of cast gypsum ware, A (3) 95.
**Ermolin, G. M.** Krasnoufimsk fire clays, A (2) 82.
**Ern, C. F., Jr.** Grinding, polishing, etc., machines, P (2) 52.
**Ernst, H.** Comparative tests with grease-lubricated artificial resin and metal bearings for intermittent crane service, A (4) 149.
**Ernst, H., Herfurth, C., and Nenninger, L. F.** Grinding machine, P (2) 52.
**Ernst, H., and Kronenberg, M.** Grinding milling cutters tipped with cemented carbides, A (9) 295.
**Erwin, H. R.** Pottery industry in Iowa, A (3) 93.
**Eske, F. W., and Altenhein, E. F. O.** Fire bridges of furnaces burning solid fuel, P (6) 223.
**Eskola, P., Vuoristo, J., and Rankama, K.** Experimental illustration of spilite reaction, A (10) 339.
**Esme, A.** Natural resources of Zr, A (9) 313; Zr compounds—application in ceramic industries, A (10) 341.
**Espe, W., and Böhme, J.** Glass as industrial material in vacuum technique, A (2) 63.
**Essex, J. L.** Commercial developments of beidellite clay, A (4) 156.
**Estep, T., Seltz, H., and Osborn, W. J.** Effect of $Na_2O$, CaO, and MgO on ash fusion temperature using synthetic coal ash, B (5) 173.
**Esterline, J. W.** Graphic routes to greater profits, B (9) 319.
**Estey, R. S.** Selection of color temperature altering filters, A (2) 65.
**Eustance, H. W.** Reconstructing brick-paved Stewart Ave. in Ithaca, N. Y., A (6) 220.
**Evans, B. S.** Determination of Co—volumetric method, A (1) 42.
**Evans, C. E.** Lens-grinding machine, P (7) 241.
**Evans, E.** Scum—causes and cure, A (4) 142.
**Evans, M. H.** Microchemical test for selenium, A (5) 201.
**Evans, P., and Reid, A.** Drilling mud—manufacture and testing, B (4) 166.
**Evans, W. E.** Bottle or glass-blowing machine, P (1) 15; Feed-regulating mechanism of machines for making glass bottles, P (8) 277; Machine for manufac-

turing glass bottles, etc., P (6) 218, P (8) 278.
**Everhart, J. O.** Secondary expansion in refractory clays, B (8) 281; Special wear-resisting metals for clay machinery, A (3) 111; Technique in studying body defects, A (4) 152; see Dierker, A. H.
**Evstrop'ev, K. S.** Viscosity and electrical conductivity of fused salts and glasses, A (10) 327; see Skornyakov, M. M.
**Evstrop'ev, K. S., and Goralnik, A. S.** Viscosimeter for viscosity determination of fused glasses and slags, A (5) 194.
**Ewald, A.** Turned and milled glass, A (8) 276.
**Ewell, R. H.** Reaction-rate theory of viscosity—applications, A (7) 249.
**Eyer, P.** Enamel and glaze, P (5) 176.

**Faberge, A. C.** Simple spring torsion balance, A (6) 226.
**Fabrique de Porcelaine Langenthal Soc. Anon.** Kilns for ceramic material, P (1) 34.
**Fackt, G. P.** See Pearne, F. Y.
**Faktorovich, B. A.** See Vasil'ev, K. A.
**Falk, H.** See Shetelig, H.
**Falkenstein, E., and Barthelmess, E.** Drier for granular materials, P (4) 153.
**Fanderlik, M.** See Čtyroký, V.
**Fang, S.-M.** Crystal structure of sodium metaborate, A (9) 315.
**Farnsworth, M., and Ritchie, P. D.** Spectrographic studies on ancient glass—Egyptian glass (18th dynasty), especially its Co content, A (7) 249.
**Farr, C.** See Boulton, W., Ltd.
**Fassin, G.** Colorimeter, P (2) 79.
**Fassin, G., and Miles, J. R.** Colorimeter, P (2) 79.
**Fasting, J. S.** Collection of dust from gases from cement kilns, P (1) 31.
**Faulkner, J. A.** Protecting health of wage earners repays industry, A (9) 318.
**Faure, L.** Enamels on cast iron, A (1) 8.
**Faust, G. T., and Peck, A. B.** Refractive indices of glasses in ternary system $K_2O$·4$SiO_2$–$Fe_2O_3$–$SiO_2$, A (10) 326.
**Favre, G. A.** White oxide of tin, P (10) 343.
**Fawkes, A. L.** Heat-resisting muffle equipment for vitreous enameling, A (7) 245.
**Fedorovskii, N. M.** Chrome-ore raw materials for refractory industry, A (5) 186.
**Fedoseev, A. D., and Raiskaya, I. M.** Ceramic concentrates resulting from enrichment of pyritic schists from Nevski deposits, A (1) 35.
**Fedoseev, A. D., and Samollov, V. F.** Refractory clays from Krasnogorovka deposits, A (1) 39.
**Fehling, R.** Attack of coal slags on refractory brick, A (8) 280; see Rosin, P.
**Fehse, A.** Glass as industrial material, A (8) 274; see Pirani, M.
**Feicht, F. L.** See Littlefield, J. B.
**Felgina, E. J.** See Zaltsev, M. V.
**Felker, F. M.** Report of Committee on Patents, A (7) 266.
**Feist, H.** Safety glass for automobiles, A (8) 275.
**Fejes, L.** See Konigswarter, W.
**Fejlek, L.** Importance of Vinohrady Ceramic School for glazed tile products, A (7) 255–56.
**Fell, H. G.** Victoria and Albert Museum, A (7) 243; Worcester vases, A (8) 270.
**Fellows, R. L.** See Lange, L. A.
**Fells, H. A.** Combustion, A (2) 80.
**Felsner, E.** Faults from oils and their prevention, A (6) 215.
**Feodot'ev, K.** See Goncharov, V.
**Ferguson, J.** Electric furnace, P (2) 67.
**Ferguson, J. B.** See Patton, J. R.
**Ferguson, R. P.** See Hubbell, R. H., Jr.
**Ferrari, F.** Ferrari cements, A (9) 298.
**Ferro Enamel Corp.** Enamel building at Great Lakes Exposition, A (2) 57; Endless-flow process for frit manufacture, A (9)299; Magnetic separator removes iron from liquid enamels, A (2) 57; Porcelain enamel for 1937, A (2) 57.
**Fessler, A. H.** Bond for mineral or rock wool, P (11) 352; Ceramic composition, P (4) 148; see McDougal, T. G.
**Fessler, A. H., and Russell, R., Jr.** Ceramic article making apparatus, P (5) 194.
**Fessler, A. H., and Schwartzwalder, K.** Ceramic body, P (5) 191; Spark plug insulator, P (1) 27.
**Fettke, C. R., and Stewart, W. E.** Slagging action of Western Pennsylvania coals on refractories in small pulverized coal installation, B (1) 24.
**Fetz, E.** Copper-lead bearings from metal powder, A (1) 28.
**Fichtner, F.** Dresden faience, A (11) 347.
**Ficklen, J. B., and Goolden, L. L.** Behavior of dusts under mechanical impingement, A (5) 192.
**Fieldner, A. C.** Annual report of research and technologic work on coal (fiscal year 1937), B (6) 229; Fuels of today and tomorrow, A (7) 259; Résumé of research and technologic work on coal conducted by Technologic Branch of Bureau of Mines in 1936, B (3) 114.
**Fieldner, A. C., Emery, A. H., and Bernewitz, M. W. von.** Bibliography of U. S. Bureau of Mines investigations on coal and its products (1910–1935), B (1) 34.
**Figard, P.** Spark plug, P (1) 27.
**Filintzev, G. P., and Tereschenko, G. K.** Effect of shape of samples on shrinkage on drying and firing, A (3) 122.
**Filippi, C. R.** See Hursh, R. K.
**Filippi, H.** Brick cutting machine, P (8) 279.
**Filippov, A. N.** See Tolmachev, Yu. M.
**Finch, G. I., and Wilman, H.** Surface structure of SiC, A (1) 2.
**Finch, J. W.** Bureau of Mines and mineral utilization, B (7) 263.
**Fincke, V.** Adobe house construction, A (7) 252.
**Findlay, W. F.** Wastes of enamels, A (1) 9.
**Fine, J.** Sliding ground-glass joint, A (3) 100.
**Fingas, E.** See Kröger, C.
**Fink, G.** Flashing brick or tile, P (7) 257.
**Finn, A. N.** Optical glass at National Bureau of Standards, A (11) 351; Potash in glass industry, A (10) 326.
**Fireman, P.** Production of iron compounds, P (11) 367.
**Firkin, T. McC.** Manufacture and uses of silica refractories, A (2) 72.
**Fischer, E.** Glass defects and their removal in Fourcault glass, A (2) 63, A (4) 137.
**Fischer, H.** Glass composition for electrical discharge devices, P (1) 15; Luminescent glass, P (2) 68.
**Fischer, J. F.** Grinding wheel, P (9) 296.
**Fischer, J. L.** Handbook of glasspainting, B (8) 276.
**Fischer, W. H.** Drill grinding tool, P (8) 268.
**Fish, P. C.** Manufacturing composite vitreous tile and concrete staves, P (2) 76.
**Fisher, C. H.** Relation between volatile matter and H-C ratio of coal and its banded constituents, A (10) 337.
**Fisher, C. H., and Eisner, A.** Coal hydrogenation—primary liquefaction by destructive hydrogenation of O, N, and S linkages, A (5) 195; Primary liquefaction of coal by hydrogenation—chemical nature and effectiveness of the vehicle, A (1) 34.
**Fisher, E. E.** Manufacture of barium compounds, P (3) 121.
**Fisher, H. A.** Glass sheet, P (5) 183; Variegated glass sheets, P (6) 219.
**Fisher, H. C.** Refractory, P (8) 282, P (9) 309; Refractory for induction furnaces, P (3) 112.
**Fisher, W. V.** Means for forming glass molds, P (5) 183.
**Fitterer, G. R.** Metallurgical applications of C-SiC thermocouple, A (3) 111.
**Fix, E. L.** Laminated glass, P (1) 16.
**Fix, F. A.** Application of dry mixing in whiteware and refractories industries, A (11) 359.
**Fleming, E. M.** Coefficients of friction between rubber tires and concrete road surfaces, A (9) 298.
**Flint, F. C.** Decolorizing glass, A (1) 11; Glass batch, P (6) 218, P (7) 250.
**Florez, L. de.** Automatic control and chemical industries, A (5) 192.
**Flygare, C. G.** Grinding wheel positioning mechanism, P (2) 52; see Silven, H. A.
**Flygare, C. G., and Silven, H. A.** Grinding wheel truing apparatus, P (2) 52.
**Foex, M.** Solubility of oxides at 1200° in molten boric anhydride, A (7) 264.
**Fogg, W. S.** Out-of-roundness of grinding wheels corrected, A (3) 92.
**Fonim, A. I.** See Bugarev, L. A.
**Foote, P. D.** See Compton, K. T.
**Forbes, J. J.** Results of first-aid training of employees of mine or plant, B (1) 47.
**Forbes, J. J., and Grove, G. W.** Protection against mine gases, B (1) 47.
**Forbrich, L. R.** See Carlson, R. W.; MacPherson, D. R.
**Ford, J. T.** See Rabezzana, H.
**Ford, W. D.** Economical method of decorating whiteware, A (4) 129.
**Forges et ateliers de constructions électriques de Jeumont.** Furnace for fusing glass, P (3) 102.
**Forgó, I.** See Balog Ferenc és Társa Fal- és Padlóburkoló Vállalat.
**Forkhardt, R.** Grinding tools, P (2) 52.
**Forman, L. P., and Pancoast, W.** Manufacture of sheet glass, P (9) 306.
**Forsén, L.** Chemistry of Portland cement: I, III, A (3) 94.
**Forster, A. L.** See Chance Bros. & Co., Ltd.
**Fortuna-Werke Spezialmaschinenfabrik A.-G., and Danner, H.** Device for dressing grinding wheels with shouldered profile, P (5) 170.
**Foster, A. C.** See Frisch, M.
**Foster, L. V.** Analyzing ocular, P (2) 67.
**Foster, W. D., and Schrenk, H. H.** Petrographic identification of atmospheric dust particles, B (6) 238.
**Fouasson, F.** See Gire, G.
**Fowler, A. A., and Otis, R. M.** Refractory material, P (5) 190.
**Fowler, I. G.** Apparatus for treating glass sheets, P (8) 276.
**Fowler, J. T.** Size reduction by impact, A (9) 311.
**Fowler, L. S.** Building block, P (7) 252.
**Fowweather, F. S.** Silicosis in sandblasters—examination of sands associated with sandblasting, A (2) 89.
**Fox, C. A.** Roll grinding machine and method, P (7) 242.
**Fox, C. S.** Solubility of quartz, A (7) 262; Utilization of fluid mud in coal mines, A (10) 344.
**Fox, J. H.** Glass building block, P (8) 277.
**Fox, S., & Co., Ltd.** See Howes, S. R.
**Fraas, F., and Ralston, O. C.** Beneficiation of spodumene by decrepitation, B (4) 159.
**Fraeger, L.** See Biltz, W.
**Fraenckel, V. H.** Pyrex brand glass seals, A (3) 100.
**Frahme, H.** Chemist at work: X, Duties of ceramist in research and plant control, A (11) 367.
**Francis, E. V.** Automatic system for supplying pulverized fuel to furnaces, P (3) 112; Fuel feeder, P (3) 114.
**Francis, V. J.** See General Electric Co., Ltd.
**François, F., and Delwaulle, M.-L.** Oxidation of Ni hydrate by persulfate of sodium in alkaline medium, A (3) 120.
**François, P.** British School of Archeology, Athens, A (2) 53.
**Frank, J.** Magnesite deposits of central Europe, A (7) 262.
**Frank, P. E.** Viscosity of optical glasses containing PbO, A (2) 66.
**Franke, H. A., and Herring, C. T.** Bauxite and aluminum, B (11) 357.
**Frankel, J. J.** Separation of lime and magnesia in dolomite, A (11) 356.
**Franklin, K. J.** See Barclay, A. E.
**Franklin, R. G., and Vickers, A. E. J.** Pozzuolanic cements, A (2) 55.
**Frantz, S. G.** Magnetic separator, P (3) 112; Separation by magnetic methods, A (10) 335.
**Frantz, W.** Investigation of grinding process of corundum abrasives with ceramic bond—effect of hardness of disk, A (5) 169.
**Fraser, G. H.** Pulverizer, P (1) 32.
**Frazier-Simplex, Inc.** Apparatus for drawing sheets of glass, P (10) 327; Glass-drawing tank, P (6) 218.
**Freeman, R. B.** See Clark, D. S.
**Freling, L., and Dorren, J.** Recovery of Al compounds, P (10) 332.
**Frenkel, A. M.** Preliminary results of operation of Dnieper alumina plant, A (2) 73.
**Frenkel, J.** Liquid state and theory of fusion: I, Continuity between solid and liquid states; II, Theory of fusion and crystallization, A (3) 119.
**Freundlich, H.** Recent work on gels, A (4) 162; Structures and forces in colloidal systems, A (2) 86.
**Fricke, G. A.** Heater closures, A (6) 225.
**Fricke, R., and Hüttig, G. F.** Hydroxides and oxyhydrates, B (6) 235.
**Fried, B. J.** See Alimarin, I. P.
**Friedberg, I.** See Bogoroditskii, N. P.
**Friedmann, W.** Technical proposals and data for examination of thermal performance of glassmelting tanks, A (8) 275.
**Frisch, M., and Foster, A. C.** Pulverizer performance affected by grindability of coal, etc., A (4) 154.

**Fritts, S. S.** Average diameter of particles just passing 325-mesh sieve, A (8) 283.
**Fritze, O., and Ruttenauer, A.** Glass article manufacture, P (6) 218, P (9) 305.
**Froemming, F. M.** Resurfaceable hone or file, P (6) 209.
**Frondel, C.** Selective incrustation of minerals, A (5) 198; see Dorris, J. E.
**Frost, A. C.** See McGrath, R.
**Frydlender, J. H.** Natural and artificial zeolites, A (2) 73.
**Fuerst, B. D.** Tumbler design, P (9) 298.
**Fuerst, E. W.** Ashtray design, P (8) 271; Bottle design, P (5) 172; Drinking glass design, P (4) 131; Glass design, P (3) 94, P (9) 298; Siphon head design, P (6) 211; Tumbler design, P (3) 94, P (4) 131.
**Fukagawa, T.** See Isobe, J.
**Fulcher, J.** Bottle design, P (7) 244.
**Fulda, W., Wiedbrauck, E., and Büche, K.** Recovery of Al compounds from aluminiferous minerals, P (9) 309.
**Fuller, R. W.** Wheel-truing device, P (3) 93.
**Fultner, J.** Steel, concrete, glass, A (9) 305.
**Fulton, W. F.** Precision gas analysis, A (5) 201.
**Funkey, J. H.** Bottle design, P (2) 54.
**Funsten, S. R.** Recent developments in use of contact clays, A (5) 198.
**Fussteig, R.** Bleaching clay: III, Behavior of oil constituents in adsorption process; IV, Characteristics; V, Classification; VI, Adsorption process in percolation method, A (4) 155; VIII, Adsorption process in vapor phase, A (10) 338.
**Fuwa, K.** Determination of carbon in glasses colored by carbonaceous matter, A (1) 42; Glass colored by sulfurous matter: V–VI, A (5) 178; Glasses containing iron oxide: IV, A (2) 63; XIII, A (4) 138.

**G., A.** Fuel for firing brick, A (11) 362.
**G., E.** Refractory products and mortars—observations and formulas, A (7) 254.
**Gaillard, P.** See Bodin, V.
**Galakhov, F. Ya.** Colorimetric determination of silica and rapid analysis of corundum, A (4) 160.
**Galbiati, G.** Impact resistance of enameled sheet iron, A (10) 324.
**Gale, W. A.** Chemistry of Trona process from standpoint of phase rule, A (10) 338; Preparing potassium pentaborate, P (1) 45.
**Galey, H. J.** Apparatus for bending glass sheets, P (5) 182.
**Gallenkamp, A., & Co., Ltd.** Apparatus for measuring $p_H$ by color wedges, A (8) 283; Vacuum drying oven, A (6) 226.
**Galloway, C. T.** See Bullock, E. W.
**Gammache, F. J.** Grinder, P (10) 322.
**Ganguli, A.** Structure of glass, A (1) 14.
**Ganzenmüller, W.** Gold-ruby glasses: I–II, A (5) 179; III, A (6) 215.
**Gardner, D.** Mg production, P (5) 199; Treatment of Be ores or compounds, P (10) 341.
**Gardner, F. V.** Variable budget in management by exception: I–II, A (3) 123.
**Gardner, L. U.** Reaction of living body to mineral dusts with and without complicating infection, A (8) 293.
**Garner, C.** Automatic polishing and buffing of Cu, Ni silver, and stainless steel, A (8) 267.
**Garner, T. L.** China clay as filler in rubber compounding, A (10) 338.
**Garner, W.** Color theory, A (2) 53.
**Gaskell, J.** Apparatus for removing lengths from moving strip of glass, P (5) 182.
**Gatzke, P.** Apparatus for firing ceramic material, P (10) 337; Electric tunnel furnaces for ceramic industry, A (11) 362.
**Gaudry, H.** See Laure, Y.
**Gauger, A. W.** Ash softening temperature and ash composition in use of coal, A (4) 153.
**Gautheret, R.** Electricity in enamel industry, A (2) 57.
**Gavrilov, V. V., and Samus, A. v.** Effect of alumina on optical constants and chemical resistance of heavy baryta crown glass of L-24 type, A (2) 61.
**Gebert, E. B.** See Noel, D. O.
**Geb. Junghans, A.-G.** Clock with front of ceramic, vitreous, etc., material, P (9) 298.
**Gecelev, A. B.** Obtaining gypsum sponge from anhydrite, A (1) 6.
**Geer, M. R.** See Yancey, H. F.
**Geffcken, W.** See Berger, E.
**Geffkins, A. C.** See General Electric Co., Ltd.
**Geiger, H. I.** Basic open-hearth process: I–IV, A (10) 329.
**Geilmann, W., and Meyer-Hoissen, O.** Analysis of colored glasses: I, Determination of Cu, A (1) 10; Microchemical analysis of glasses: VII, Detection of Au; VIII, Determination of As, A (2) 64.
**Gell, P. V. W.** Means for manufacturing molded glassware, P (7) 251.
**Geller, R. F., Bunting, E. N., and Creamer, A. S.** "Soft" glazes of low thermal expansion, A (4) 130.
**Gelstharp, F.** Glazing glass, P (11) 352.
**General Electric Co.** Psychrometric chart for air-conditioning computations, A (4) 152; Refrigerator cabinets sorted en route from factory to warehouse, A (2) 58.
**General Electric Co., Ltd.** Air-tight joints between metals and ceramic materials, P (7) 249; Sealing electric conductors through quartz or hard glass, P (6) 219; Sealing off glass filling tubes of vessels filled to pressure higher than atmospheric, P (6) 219; Vacuum-tight ceramic bodies for sealing to soft glass, P (8) 279; Vacuum-tight sealing of W or Mo conductors through quartz glass or glasses of high silica content, P (9) 306; see Cheltnam, C. H. W.
**General Electric Co., Ltd., Breadner, R. L., and Guttridge, E. J.** Glass-to-metal-joints, P (3) 102.
**General Electric Co., Ltd., Francis, V. J., Harris, N. L., and Ryde, J. W.** Sealing electric conductors into quartz envelopes, P (3) 102.
**General Electric Co., Ltd., and Geffkins, A. C.** Etching glass, P (1) 15.
**General Electric Co., Ltd., and Partridge, J. H.** Refractory glasses, P (3) 102.
**General Electric Co., Ltd., Pirani, M., and Partridge, J. H.** Vitreous bodies, P (9) 309.
**General Motors Corp.** Ceramic bodies as insulators for spark plugs, P (5) 191; Heat-resisting insulating material, P (5) 191; Method and apparatus for forming ceramic bodies, P (4) 148; Refractory body, P (1) 25; Spark-plug insulators, P (6) 224; Tunnel kiln for ceramic products, P (6) 229, P (10) 338.
**General Refractories, Ltd.** Refractories, A (11) 354.
**Gengenbach, O.** Application possibilities of box furnaces with air circulation, A (2) 56.
**Genzler, M. N.** Porous ceramic ware, P (5) 191.
**George, H.** High-temperature refractories, A (11) 354.
**George, H., and Delpech, G.** Electrical heating means, P (6) 218.
**Georgieff, K. A.** Ore district of Panagiuriste, Bulgaria, A (5) 197.
**Gerasimov, A. P.** Feldspar of Mt. Beshtau (North Caucasus), A (7) 261.
**Gerasimovskii, V. I.** Zircon silicates in Lovosero tundra, A (7) 263.
**Gerhardt, P.** Classifier for dry impalpable fines, P (6) 227.
**Gerke, F. K.** Furnace for determining C and S by ignition, A (9) 310.
**Gerlach, A.** See Bauer, W.
**Gerlach, W.** Spectrum analyses and their use in investigating glasses and raw materials: (A) Fundamentals and procedures, A (6) 217.
**German, S. L.** Determining coherence of silica masses and readiness for molding, A (1) 28; Interreaction between lime and quartzite powder during silica brick manufacture, A (1) 20; Testing shaping capacity of silica mixes, A (6) 217.
**Germer, E.** Applying luminescent colors on bodies of glass, etc., P (10) 323.
**Gerpinnes, H.** Glass novelties in European markets, A (6) 215.
**Gerstell, W. D.** See Jamison, E. A.
**Gerth, G.** Preparing German feldspar ore by flotation and magnetic separation, A (1) 47.
**Gerth, G., and Baumgart, A.** Possibilities of preparing intergrown Hagendorf feldspar, A (1) 39.
**Gerth, W. H., and Krautheim, A.** Dish design, P (3) 94.
**Getz, C. A.** See Smith, G. F.
**Geutebrueck, A.** See Guertler, W.
**Geveke, W.** Grinding device, P (6) 208.
**Gewerkschaft Keramchemie - Berggarten.** Ceramic materials, P (5) 204; De-airing and degasing ceramic bodies, P (5) 194.
**Geyer, A.** Continuous kilns, P (2) 81; Kilns and plants for firing brick, P (3) 114.
**Gezburg, A. A.** Drying refractories for glass industry, A (5) 186.
**Gezelius, R. A.** See Briggs, C. W.
**Ghaye, A.** See Spiers, W.
**Gibbons Bros., Ltd., and Edwards, E. W.** Tunnel ovens, P (9) 312.
**Gibson, A. C.** Saucers for cups, glasses, etc., P (7) 257.
**Gibson, J. H.** See Babcock & Wilcox, Ltd.
**Gilard, P.** Course in physical chemistry of glass, B (8) 276.
**Gilard, P., and Dubrul, L.** Calculation of physical properties of glass: III, Index of refraction, A (9) 301; Coloring glass by staining: III, A (1) 11; Physicochemical bases of glass industry, B (10) 327.
**Gilard, P., Dubrul, L., Henry, G., Scohy, and Piéret.** Viscosity of glass, A (8) 276.
**Gilard, P., Dubrul, L., Jamar, F., and Crespin, D.** Fluorescence of glass, A (7) 247.
**Gilbert, H. F.** Vitreous enameling process, P (2) 59.
**Gilbert, W.** Aspects of ceramic industry, A (10) 343.
**Gilby, G. T.** Bowl design, P (2) 54.
**Gilliland, E. R.** Fundamentals of drying and air conditioning, A (8) 284; see Walker, W. H.
**Gillis, H. B., and Morrison, F. C.** Manufacture of silica brick by Dominion Steel and Coal Corp., Ltd., Sydney, N. S., A (11) 354.
**Gilmore, R. E.** Coal for ceramic purposes, A (1) 32.
**Gilmore, R. E., and Nicolls, J. H. H.** Friability and size stability tests on coal, A (4) 154.
**Gilt Edge Safety Glass, Ltd., Perry, H., and Grotefeld, A. W.** Means for tempering glass, P (1) 16; Tempering glass, P (1) 17.
**Gimeno, H.** Tile roofing, P (2) 76.
**Gimson, J. F.** Difference between porcelain and bone china, A (2) 76.
**Ginzberg, A. S.** Attempts to produce fused mullite, A (7) 253; Relations between silicates and sulfides, A (11) 366; Valuation of raw materials for fused rock industry, A (1) 15.
**Giolitti, F.** Types of refractories for open hearths, A (4) 145.
**Gire, G., and Fouasson, F.** Basic selenates and tellurates, A (7) 263.
**Giuscă, D.** Crystal chemistry of simple silicates of rare earths, A (1) 41–42.
**Glaser, K.** Bauxite clays of Grudków as chemical raw material, A (9) 313.
**Glashütte Achern A.-G.** Furnace for melting glass, P (5) 182.
**Glashüttenwerke Phönix G.m.b.H.** Making hollow articles of laminated glass, P (3) 102; Making hollow articles of wired glass, P (1) 16.
**Glass, J. J.** Anorthite from Duke Island, Alaska, A (10) 338.
**Glass Improvements, Ltd.** Apparatus for drawing sheets of glass, P (11) 352.
**Glasson, V. V., and Uspenskaya, E. A.** Determining elimination of water in slips by filtration analysis, A (5) 191.
**Glaswerk G. Fischer.** Production of glass tubing with multilayer walls, P (2) 68.
**Gleim, E. J.** See Ilsley, L. C.
**Glenning, C. V.** Buffing compositions, P (8) 268.
**Glocker, R.** Principles and applications of measuring strains by X-rays, A (11) 366.
**Glovna, K.** Industrial operations presented by tables, graphs, and charts, A (8) 293.
**Godlevskii, M. N.** See Alekseeva, E. F.
**Goebels, P.** Method and apparatus for mixing finely divided material, P (10) 336.
**Goehlich, H. J.** See Schaefer, C.
**Goens, E.** Calculation of propagation velocities of elastic waves in crystals, A (10) 342.
**Goerz, P.** Ceramic materials in fine mechanical work, A (3) 121.
**Golden, P. L.** See Storch, H. H.
**Goldich, S. S.** Rock weathering, A (6) 231.
**Goldsbrough, W., and Throssell, S. G.** Conservation of heat by insulation, A (4) 143.
**Goldschmidt, A.** See Eirich, F.
**Goldschmidt, T., A.-G.** Producing a reactive alumina readily soluble in acids, P (11) 367.

**Goldschmidt, V. M.** Ceramic material, P (5) 189; Fireproof building material, P (8) 279; Olivine and forsterite refractories in Europe, A (10) 331; Refractories, P (3) 107; Refractory materials, P (1) 25, P (5) 190.
**Goldsztaub, S.** Observations on boehmite, A (9) 314.
**Golovatyi, R. N.** Effect of chemical composition of refractories on separation of C according to $2CO \rightleftarrows CO_2 + C$, A (2) 71; Physicochemical changes in fire brick in coke ovens, A (8) 281.
**Goncharov, V., Feodot'ev, K., and Vogman, D.** Use of spinel binder for chromite refractories, A (5) 189.
**Goncharov, V., and Kleinberg, I. T.** Mineralogy of forsterite refractories, A (2) 72.
**Gonser, B. W.** Tin as chemical raw material, A (4) 158; see Slowter, E. E.
**Gonyer, F. A.** See Larsen, E. S.
**Goodby, W. T.** See Whitehead, F. W.
**Gooding, E. J.** Decolorizing glass, A (1) 11.
**Goodman, R. A.** Buffing wheel, P (3) 92.
**Goodman, W.** New tables of psychrometric properties of air-vapor mixtures, A (6) 226, A (7) 258.
**Goodrich, B. F., Co.** Rubber withstands sandstorm, A (1) 30.
**Goodrich, L. F.** Glassworking press, P (9) 305.
**Goodwin, F. G.** See Harlow, W. E.
**Goolden, L. L.** See Ficklen, J. B.
**Goralnik, A. S.** See Evstrop'ev, K. S.; Skornyakov, M. M.
**Goranson, R. W.** Silicate–water systems: "Osmotic pressure" of silicate melts, A (1) 44; Solubility of water in albite melt, A (3) 116.
**Gorbachev, N. V., and Ratner, E. S.** Illuminating properties of mat glasses, A (7) 248.
**Gordon, C. H.** Buried cultures of Near East: II, A (3) 93.
**Gordon, D. D.** Manufacture of glass bottles, P (1) 16.
**Gordon, M. M.** See Kind, V. A.
**Gordy, W. J.** Part of my and my father's experience in pottery, A (11) 367.
**Gorely, J.** Old Wedgwood, B (4) 130.
**Goria, C.** See Prever, V.
**Gormly, A. L.** Refractory, P (9) 309.
**Gornyi, Yu. Ya.** Determining silicon in cast iron, steel, and silicates, A (2) 85.
**Goskar, T. A.** Driers for roofing tile, A (5) 193, A (7) 257.
**Gossler, O., Glasgespinst-Fabrik Ges.** Heat- and sound-insulating bodies of spun glass, P (7) 250.
**Gossner, B.** Mineral substances producing silicosis, A (1) 47.
**Gottschalk, V. H.** Development and application of coercimeter, B (11) 365.
**Gould, C. E., and Hampton, W. M.** Statistical methods applied to manufacture of spectacle glass, A (9) 305.
**Gould, G. B.** Interpretation of laboratory coal tests—proximate analysis and calorific value, A (4) 154.
**Gould, G. S., and LaFleur, E. D.** Grinding wheel truing device, P (2) 52.
**Gould, R. E.** Experimental determination of factors causing strains in true hard-fire porcelain flatware and their elimination, A (1) 26; Graphite resistor, P (1) 34; TVA in ceramic research, A (2) 89.
**Goyot, F. A.** Machine for turning and polishing cylinders of printing machines, P (2) 52.
**Grabau, M.** Optical properties of Polaroid for visible light, A (3) 100; Polarized light in everyday life, A (7) 258.
**Gracheva, O. M.** See Poluboyarinov, D. N.
**Grady, R. I., and Chittum, J. W.** Chemist at work, A (10) 326, A (11) 367.
**Graemiger, B., and Ludin, W.** Impact crusher for comminuting hard material, P (3) 112.
**Graf, V. J.** Apparatus for making sinks, P (8) 272; Sink, P (11) 349.
**Graham, R., and Hay, R.** Identifying nonmetallic inclusions in steel, A (1) 8.
**Graham, R. P., and Sullivan, J. D.** Critical study of determination of exchangeable bases in clays, A (6) 230.
**Graham, W. C.** Atomizer, P (2) 79.
**Granigg, B.** Fundamentals of Turkish iron and steel industry, A (8) 280.
**Grant, J.** Spark plug, P (1) 27, P (11) 359.
**Gränzer, R.** Recent electric furnaces for glass and enamel, A (11) 362.
**Gräser, F.** Quality of polished metal surfaces, A (1) 2.
**Graton, L. C.** Technique of mineralography at Harvard, A (1) 39.
**Gravestein, H., and Middleberg, A. W. F.** Detection of small quantities of boric acid in glass, A (2) 60.
**Grawe, O. R.** Ice as agent of rock weathering, A (2) 82; Mineral thermometer, B (10) 336.
**Gray, D. E.** Glass drawing apparatus, P (8) 277.
**Gray, D. E., and Gregory, D. E.** Transparent building unit, P (6) 219.
**Gray, G. W.** See Brammall, A.
**Gray, J. H.** See Kent, B. B.
**Gray, J. T.** System of plant operation to reduce enameling rejects, A (11) 349.
**Gray, J. T., *et al.*** Discussion of "Design of sheet and cast-iron parts for vitreous enameling," A (3) 96.
**Gray, N. S.** Combustion efficiency in intermittent kilns, A (8) 286.
**Gray, W. M.** See Jephcott, C. M.
**Greaves-Walker, A. F.** Report of Committee on Ceramic Education, A (5) 204.
**Greaves-Walker, A. F., Owens, C. W., Jr., Hurst, T. L., and Stone, R. L.** Development of pyrophyllite refractories and refractory cements, B (4) 146.
**Greaves-Walker, A. F., and Riggs, S. G., Jr.** Location of ceramic mineral deposits of N. C., A (10) 339.
**Greaves-Walker, A. M.** See Paddock, O. H.
**Grebe, J. J.** Elements of automatic control, A (5) 193.
**Grechko, G.** See Astakhov, I.
**Green, A.** Effect of mode of manufacture on physical properties of building brick, A (5) 184; see Clews, F. H.
**Green, A. P., Fire Brick Co.** Refractory tunnel kiln, A (1) 34.
**Green, A. T.** See Clews, F. H.; Hugill, W.; Rowden, E.
**Green, C. J.** Cam grinding apparatus, P (2) 52; Cam grinding device, P (5) 170; see Crompton, G., Jr.
**Green, R.** Furnace of brick and tile kilns, or ovens, P (1) 34.
**Green, R. A.** See Davies, R. J.
**Greenburg, L.** Silicosis hazard in American industry, B (3) 123.
**Greene, A. E.** Treatment of alumina-magnesia-chromite ore, P (5) 203.
**Greene, J. F.** Leer construction, P (11) 352.
**Greenman, E. F.** Younge site—archeological record from Michigan, B (6) 211.
**Gregory, D. E.** See Gray, D. E.
**Gregory, J. H.** See Drill, D. C.
**Greiner, E.** Siemensite in basic open-hearth furnace, A (5) 188.
**Grewe, J.** More regular firing in batch kilns, A (11) 362.
**Gribi, F., and Gribi, P.** Manufacture of highly polished window plates, P (10) 328.
**Grice, W. S.** Building brick, P (4) 142.
**Griffin, J. H.** Flat glass polishing apparatus, P (8) 277.
**Griffing, H. J.** Roll grinding machine, P (5) 171.
**Griffiths, C. W.** Moisture determination, A (10) 335.
**Griffiths, E.** Heat-insulating materials, A (8) 293; Thermal insulating, A (2) 74; see Sherratt, G. G.
**Griffiths, E. and Awbery, J. H.** Apparatus for maintaining constant humidity, A (5) 192.
**Griffiths, N.** Silicon carbide in refractories, A (2) 74.
**Griggs, D.** Deformation of single calcite crystals under high confining pressures, A (5) 196.
**Griggs, F. E. P.** Cleaning developments—Na orthosilicate—Na cyanide, A (1) 7.
**Grigor'ev, D. P.** Formation of zones in silicate melt containing F, A (6) 232.
**Grigor'ev, D. P., and Iskül, E. W.** Regeneration of amphiboles from their melts at normal pressure, A (3) 116.
**Grigor'ev, P. N.** Determination of Ca and Mg oxides, A (1) 42.
**Grigor'ev, P. N., and Dubovitzkaya, V. G.** Direct determination of $Al_2O_3$ in silicates, A (5) 200.
**Grigor'ev, P. N., and Kozhina, E. I.** Analysis of Portland cement, A (2) 84.
**Grim, R. E.** See Bradley, W. F.; Clark, G. L.
**Grim, R. E., Bray, R. H., and Bradley, W. F.** Mica in argillaceous sediments, A (4) 157.
**Grim, R. E., Lamar, J. E., and Bradley, W. F.** Clay minerals in Illinois limestones and dolomites, A (6) 229.
**Grimm, H. G., and Huppert, P.** Vitreous compositions or glasses, P (2) 68.
**Grimshaw, G. E.** Backing up refractories with insulating material: I–II, A (10) 329.
**Grimson, J. F.** See Gimson.
**Groeniger, W. C.** Defecator with integral tank and evacuator, P (5) 191.
**Groote, P. de.** Heat losses through walls of glass furnaces of hearth type, A (4) 138.
**Groppel, K.** Vibratory sieves, P (2) 80.
**Gross, G. O.** Compound refractories with high grog content, A (1) 18.
**Gross, J.** Crushing and grinding, B (8) 286.
**Grosskopf, K.** See Stampe, G.
**Grotefeld, A. W.** See Gilt Edge Safety Glass, Ltd.
**Grove, G. W.** See Forbes, J. J.
**Groyen, C.** Manufacture of glazed and impervious ceramic products, P (8) 282.
**Grubbs, R. A.** See Kerr, W. A.
**Grube, G., and Heintz, G.** Formation of Ba aluminates from $BaCO_3$ and alumina in solid state, A (2) 85.
**Gruender, O. C.** Impact crusher, P (1) 32.
**Gründer, W.** Determining grindability of substances, A (8) 284.
**Grundy, F. W.** Tile made from ceramic materials, P (9) 307.
**Gruner, E.** Alkali Al silicates: VIII, Validity of Hüttig's equation for permutites, A (2) 84.
**Gruner, J. W.** Composition and structure of stilpnomelane, A (4) 156; Densities and structural relationships of kaolins and anauxites, A (4) 156.
**Gualtieri, U.** Age of glass, A (1) 10.
**Guedras, M.** Bentonite, A (8) 288.
**Guertler, W., Bergmann, P., and Geutebrueck, A.** Ease of decomposition in acid of German clays, A (2) 82.
**Guilleaume, A.** Abrasives and their tests, A (11) 345; Glass grinding and cutting tools, A (8) 274.
**Guillon, E., and Perrault, J.** Spark plug, P (9) 309.
**Guillon, H.** Gas producers, A (2) 81.
**Guimin, L.** Glucinium (Be), A (3) 115.
**Gulinova, L. G.** See Budnikov, P. P.
**Gumz, W.** Influence of moisture on combustion calculations, A (9) 312.
**Gundlach, H. R.** Roofing granule and method of coloring, P (9) 319.
**Gunka, J.** Apparatus for making colored or modified glass by additions to fused glass, P (8) 276.
**Gunness, R. C., and Baker, J. G.** Performance of mixing equipment, A (10) 335.
**Günther, A.** Double-walled (hollow) glassware, P (9) 305.
**Gupta, K. K. S.** Talc, asbestos, serpentine, and kaolin in Ajmer-Merwara, A (10) 341.
**Gurevich, A. M.** See Starik, I. E.
**Gurevich, E. E.** See Klyachko, Yu. A.
**Gurevich, G.** See Kobeko, P.
**Gurevich, M. L.** See Vepritskaya, V. F.
**Güssow, W. C.** See Dorris, J. E.
**Gut, Ya.** See Smelyanskil, I. S.
**Guth, E., and Haas, A. E.** Relation between Stefan's radiation law, Nernst's heat theorem, and Maxwell's formula for radiation pressure, A (9) 312.
**Guthrie, J. M.** Glass masonry, P (2) 68.
**Gutmann, W.** Protection of labor in glass industry, B (2) 90.
**Guttridge, E. J.** See General Electric Co., Ltd.
**Gutzeit, G.** Process for concentrating oxidized ores by froth flotation, P (10) 341.
**Guyer, E. M.** Glass tempering method, P (8) 277.
**Guzev, V. K.** See Budnikov, P. P.
**G. W. B. Electric Furnaces, Ltd.** Rotary electric kiln for decorated pottery, A (4) 154.
**Gwennet, G.** British modern architecture, A (5) 190; Chinese art treasures, A (8) 269; Rare and ancient glasses—Buckley's collection, A (2) 54.
**Gyproc Products, Ltd., and Cavadino, C. G. F.** Plaster of Paris compositions, P (8) 271.

**H., J.** Glass painting in Baltic states, A (6) 209.
**Haas, A. E.** See Guth, E.
**Haase, M.** Filter polarizers and their use, A (5) 193.
**Haberly, L.** Mediaeval English pavingtiles, B (6) 210.
**Hachmuth, K. H.** See Katz, D. L.

**Hackel, W.** Dielectric constant and dipole losses of glasses at high frequencies, A (10) 326.
**Haddan, R.** Reducing tendency of tempered glass articles to yield under internal stresses, P (7) 251.
**Haddock, W.** See Norton Grinding Wheel Co., Ltd.
**Hadland, C. A.** Composition building block, P (11) 353.
**Hadlock, C.** See Shepherd, C. B.
**Hadwiger, H.** Coating capacity of enamel, A (6) 212.
**Hager, C. R.** Oxidation of titanous salts, P (10) 343.
**Hägg, G., and Söderholm, G.** Crystal structure of Mg-Al spinels with an $Al_2O_3$ surplus and $\gamma Al_2O_3$, A (2) 70.
**Haglund, T. R.** Extracting alumina from bauxite, P (4) 146.
**Hague, H. G.** Conveying apparatus, P (8) 286.
**Hague, L. M.** Fibrous buff, P (5) 170.
**Hahn, C. E.** See Brown, C. A.
**Hahnel, K. O.** Behavior of tank brick at glass surface during dissolving, A (2) 60, A (4) 136.
**Haight, W. T.** Apparatus for producing sheet glass, P (10) 327.
**Hakansson, P. H.** Apparatus for grinding, polishing, or cleaning wire, P (10) 322.
**Hake, D. S.** See Kinzie, C. J.
**Halbach, H. L.** Apparatus for making sheet glass, P (4) 140; Glass-drawing apparatus, P (3) 102.
**Haldane, D.** See Robertson, T.
**Hall, E. A.** Grinding machine, P (7) 241.
**Hall, E. W.** Buffing or polishing wheel, P (5) 170.
**Hall, F. P., and Insley, H.** Supplement to "Compilation of phase-rule diagrams of interest to ceramist and silicate technologist," A (5) 202.
**Haller.** Ceramic tile of Swiss industry, A (7) 255.
**Hallesche Pfännerschaft Abt. der Mansfeld A.-G. für Bergbau und Hüttenbetreib.** Shearing charges of molten glass fed to semiautomatic machines, P (7) 251.
**Hallett, L. T.** Electric furnace for automatic combustion in microelementary analysis, A (8) 284.
**Halversen, H. N.** Glassworking machine, P (10) 328.
**Halwer, M.** See Roller, P. S.
**Hamer, E.** Glass painting, A (8) 269.
**Hamilton, A. E.** Polishing apparatus, P (9) 296.
**Hamilton, J. T.** Glass bottle design, P (2) 54.
**Hammon, J. H.** Multifocal lens and blank, P (9) 306.
**Hamos, L. v.** X-ray microanalyzer, A (9) 311.
**Hampton, W. M.** Glass in modern life: II, Optical glass, A (9) 303; Thermal endurance of glass, A (4) 139; see Gould, C. K.
**Hancock, R. T.** Law of motion of particles in fluid, A (8) 284.
**Hancock, V. H.** Optical lens, P (1) 16.
**Handrek, H.** Ceramic insulating material for high frequency, A (2) 76; Ceramic materials in high-frequency technology, A (6) 223; Important processes for sealing ceramic materials to metal and glass, A (11) 350; Making vacuum apparatus from ceramic material, A (4) 150.
**Handte, J.** Baffle apparatus for separating dust from air, P (6) 227.
**Hanel, R.** Heat-treatment of wear-resistant gray cast iron, A (1) 29.
**Hanneford-Smith, W.** See Kempe, H. R.
**Hansen, J. E.** Manual of porcelain enameling, B (2) 59.
**Hansen, J. E., and McIntyre, G. H.** Factors in producing one cover coat enamelware, A (9) 299.
**Hansen, M. O.** Glass design, P (5) 172; Tumbler design, P (2) 54, P (3) 94.
**Hansson, O.** Strength of large brickwork piers, A (9) 307.
**Hanusch, W.** Small kiln for grinding disks, A (10) 337.
**Harbison-Walker Refractories Co.** Modern refractory practice, B (3) 106.
**Harden, D. B.** Roman glass from Karanis, B (2) 54.
**Harder, O. E.** See Dorn, J. E.
**Hardgrove, R. M.** Grindability vs. mill capacity, A (9) 310; see Bailey, E. G.
**Hardinge Co., Inc.** Exhibit at American Mining Congress, A (4) 150.
**Hardy, C.** Antimony as raw material for chemical industry, A (4) 155.
**Hardy, J. C.** Manually portable motor driven polisher, P (7) 242.
**Hare, W. A., and Soler, G.** Method of studying inclusions in alloy steels, A (1) 9.
**Harford, E. F.** Apparatus for testing crushing strength of granules, A (5) 192.
**Hargrave, L. L.** See Colton, H. S.
**Harkort, Hans-Joachim.** Manufacture of Pb glazes, P (11) 359.
**Harkort, Hermann.** Production of Pb glazes, P (10) 323.
**Harley, S. J.** Grinding screw threads in shouldered work, P (1) 3.
**Harlow, W. E., and Goodwin, F. G.** Rotary filter, P (8) 286.
**Harner, R. G.** Ground coat enamel suspension improvement, A (9) 300.
**Harper, R. A. K.** Silicosis in pottery workers, A (9) 318.
**Harper, W., Jr.** Spark plug, P (11) 359.
**Harrington, D.** Dust hazards and their control in mining, B (1) 47; Methods for protection against silicosis, B (7) 266; Results of research on control or prevention of silicosis, B (7) 266.
**Harrington, D., and Davenport, S. J.** Review of literature on conditioning air for health and safety in mines, B (8) 294; Review of literature on effects of breathing dusts (silicosis), B (4) 166.
**Harris, D. L.** See Doerner, H. A.
**Harris, E. H.** Enameling machine, P (7) 246.
**Harris, E. J.** Method and apparatus for firing ceramic ware, P (1) 35.
**Harris, E. L.** Small atmospheric furnaces for high melting temperatures, A (1) 30.
**Harris, H. H.** Rôle of heat-resisting alloys in short-cycle malleableizing furnaces, A (11) 360.
**Harris, N. L.** See General Electric Co., Ltd.
**Harris, P. M., and Waring, C. E.** Diffusion of Li ions through quartz in electric field, A (4) 161.
**Harris, W. B.** Solubility of quartz in hydrofluoboric acid, A (6) 238.
**Harrison, F.** Stained glass of Yorkminster, B (8) 270.
**Harrison, G. R.** Practical possibilities in spectrographic analysis, A (1) 44.
**Harrison, W. N.** See Judd, D. B.
**Harrison, W. N., Stephens, R. E., and Shelton, S. M.** Consistency of eight vitreous enamel frits near firing temperatures, A (4) 134.
**Hart, F.** Decalcomania, P (1) 5.
**Hart, L. B.** Forming sheet-iron parts to be enameled, A (9) 300.
**Hartford, F. M.** Continuous kilns, P (2) 81.
**Hartford-Empire Co.** Glass blocks for troughs, P (11) 357; Manufacturing fireproof blocks for glass trough furnaces, etc., P (11) 357.
**Hartley, H., and Rees, W. J.** Coöperation and research, A (10) 330.
**Hartman, W. W.** Blade-sharpening machine, P (8) 268.
**Hartmann.** Prevention of accidents and occupational diseases, A (6) 237.
**Hartmann, E.** Polishing machine, P (7) 242.
**Hartmann, F.** Action of alkalis on refractory brick, A (5) 185; Discussion of "Refractories for iron-blast furnaces," A (10) 330; Viscosity of Siemens-Martin slag, A (1) 45.
**Hartmann, F. K., and Meyer, F. O. W.** Action of HCl on varying soil conditions, A (9) 312; Particle size groups of crude clay and base-exchange phenomena of HCl extracts of soils, A (9) 314.
**Hartshorn, T. D.** Copperheading of sheet-steel ground coats, A (6) 212.
**Hartung, C. A.** Device for automatic gas analysis with different measuring ranges, P (11) 367.
**Harvey, A. M.** Forming porous bodies, P (11) 353.
**Harvey, F. A., and Birch, R. E.** Olivine and forsterite refractories in America, A (10) 331.
**Harvie, W. H.** Brick pavement in Grand Rapids, A (4) 141.
**Harwood, H. F.** See Isnail, A. M.
**Hasler, H. S.** Machinery for making rustic brick, P (1) 18.
**Hass, G.** Mineralogical and physical properties of rocks and their dusts as sources of danger in stone-producing and stone-working industries, A (4) 165.
**Hassan, L.** Apparatus for tempering sheets of glass by jets of air, P (8) 276.
**Hastings, A. C., Jr.** Spark plug, P (9) 309.
**Hatch, T.** Control of industrial dust, A (9) 318; see Drinker, P.
**Hatmaker, P., and Davis, H. W.** Fluorspar industry of U. S. (Ill.-Ky. district), B (11) 364.
**Haub, G. R.** Glass transfer mechanism, P (1) 16.
**Haughey, J. A.** Glass-cutting rule, P (3) 102.
**Haught, J. W.** Laminated article, P (5) 183.
**Hauser, M.** Heat or electrical conductors, P (10) 333; Producing silicon ware, P (7) 242.
**Haviland, W. D.** Coffeepot and covered dish designs, P (8) 271.
**Hawkins, C. L.** See Hawkins, H., Ltd.
**Hawkins, H., Ltd., and Hawkins, C. L.** Machine for producing tile, P (2) 80.
**Hawkins, R. D., and Pritchard, O. D.** Improvements in crucible melting furnaces, A (11) 354.
**Hawley, J. E.** Riebeckite in quartz veins from Michipicoten district, Ont., A (5) 198.
**Hawley, J. W., and Wilson, W.** Determination of Pb on water, A (5) 199.
**Hawley, K. A.** Flux distributing insulator, P (11) 359.
**Hay, H. M.** Machine for polishing granite, marble, terrazzo, glass, etc., P (2) 80.
**Hay, R.** See Graham, R.; McIntosh, A. B.; Rait, J. R.
**Hay, R., McIntosh, A. B., Rait, J. R., and White, J.** Slag systems: FeO–$Al_2O_3$ and FeO–MnO–$Al_2O_3$, A (5) 202.
**Hay, R., White, J., and Coulfield, T. H.** Ternary system FeO–$Al_2O_3$–$SiO_2$, A (9) 317.
**Hayden, A.** Collecting English pottery, A (7) 242.
**Hayes, A.** Armco research laboratories, A (8) 292.
**Hayes, W. C.** Glazed tile from palace of Rameses II at Kantir, B (6) 210.
**Haynes, F.** See Brammall, A.
**Hays, J. W.** Ignition apparatus for closed-system fluent-combustible burners, P (2) 80.
**Hazelton, B. F., Jr.** Hollow glass building block, P (4) 140.
**Hazelton, N. W.** Pottery industry at Tonala and San Pedro Tlaquepaque districts, Mexico, A (3) 122.
**Heald, R. N.** Making abrasive tools with conducting properties, P (10) 322.
**Heald Machine Co.** Grinding or abrading machines, P (7) 241.
**Healy, Frank.** Sharpener and device for honing lawn mowers, P (8) 269.
**Healy, F. P.** Valve-regrinding device, P (10) 322.
**Heany, J. A.** MgO products, P (1) 24; Objects of nonporous silica, P (7) 251; Producing vitreous, translucent, nonporous, silica articles, P (9) 306; Vitreous siliceous article production, P (6) 219.
**Hearth, G.** See Sutcliffe, H.
**Heath, C. R.** See Heath, J. S.
**Heath, J. S., and Heath, C. R.** Cloths for filter presses, P (7) 259.
**Heaton, Butler, and Bayne.** Glass mosaics, A (4) 138.
**Hecht, F.** Microanalysis of silicates, A (5) 201.
**Hecht, H.** Pressing problems of material testing in building field, A (8) 293; Properties of brick and their utilization, A (11) 353.
**Hedinger, F. H.** Cavity brick for building purposes, P (10) 329; Wall construction, P (10) 329.
**Hedlund, O. J. W.** See Dyer, H. I.
**Hedvall, J. A.** Reactivity of solids, B (4) 164.
**Hedvall, J. A., and Schiller, G.** Reaction velocity of silicates in powdered mixtures in consequence of dissociation of metallic oxides and crystallographic changes of quartz, A (2) 86.
**Hegemann, H.** Manufacture of porcelain—practical experience, B (8) 283.
**Heiber, O.** Operating data of gas generators with revolving grate, A (8) 287.
**Heichert, H. S.** Plate-glass transfer and turnover apparatus, P (3) 102.
**Heichert, H. S., and Owen, W.** Apparatus for surfacing glass sheets, P (9) 305.
**Heidtkamp, G., and Endell, K.** Discussion of "Presence of compounds in molten glass," A (9) 302.
**Heiler, B.** German pottery industry, A (3) 122.
**Heimberger, W.** Manufacture of enamel, P (10) 325.
**Heindl, R. A., and Cooke, G. J.** Fireclay ladle sleeves, A (6) 221.
**Heindl, R. A., and Pendergast, W. L.** Deformation and Young's modulus of fireclay brick in flexure at 1220°C, A (1) 19.

**Heine, J. H. D.** Comment on Barrett and Taylor's method for studying flow characteristics of glasses and slags at high temperatures, A (7) 247.
**Heinrich, K.** Flue-gas separators, A (6) 228.
**Heinrich, M. S.** See Krakau, K. A.
**Heintz, G.** See Grube, G.
**Heinz, G.** See Carter, M.
**Heissleitner, G.** Geology and mining of chrome-iron ore deposits of Balkan mountains, A (5) 196.
**Helan, B.** Influence of draft on combustion, A (7) 259; Thermotechnical notes on firing brick products in annular kiln, A (7) 260.
**Helbig, J.** Destinw's favor or severity, A (2) 53.
**Held, E. F. M. van der.** Heat transmission by radiation, A (10) 336.
**Hellmers, H. D.** Producing granular borax, P (7) 264.
**Helm, G.** Development of ceramic machines (1927–1937), A (8) 284.
**Henderson, A.** Building block manufacture, P (10) 329; Load-bearing glazed building block, P (7) 250.
**Henderson, F. C.** Testing ceramic bodies for thermal expansion, A (3) 111.
**Hendricks, S. B.** Crystal structure of clay minerals dickite, halloysite, and hydrated halloysite, A (10) 339.
**Hendricks, T. A.** Standards of classifying coals by rank and grade, A (8) 287.
**Hendrickson, F. E.** Buffing wheel, P (9) 295.
**Hendryx, D. B.** Vacuum pressing refractory brick, A (9) 308.
**Hennion, G. F.** Self-filling pycnometer, A (5) 193.
**Henriksen, W.** See Bramming, K.
**Henry, A. V., and Vaughan, W. H.** Geologic and technologic aspects of sedimentary kaolins of Ga., A (1) 36.
**Henry, E. C., and Taylor, N. W.** Acid and base binding capacities and viscosity relations in whiteware clays, A (6) 229.
**Henry, G.** See Gilard, P.
**Henry, O. D.** Brick for constructing cylindrical silos, storage bins, tanks, etc., P (6) 220.
**Heraeus, W. C., G.m.b.H.** Ornamenting ceramic articles, P (1) 5.
**Herb, C. O.** Cast-iron die castings, A (1) 7; Fields of application for precision grinding, A (1) 1.
**Herbert, J.** See Bary, P.
**Herbst, S.** Advantages of electric furnace for firing enamel and its perfection, A (1) 7.
**Herfurth, C.** See Ernst, H.
**Herfurth, O.** Making glass mirrors, A (1) 13; Surface working of flat glass by grinding, A (1) 14, A (8) 275.
**Hermance, H. W.** See Clarke, B. L.
**Hermann, C. C.** Dust control in industry, A (3) 122.
**Hermann, E. T.** Pervious body for acoustic purposes, P (1) 48.
**Hermann, W.** Welding gray iron castings, A (1) 10.
**Heron, A. M.** Mineral production of India (1936), A (5) 197.
**Herring, C. T.** See Franke, H. A.
**Herrmann, W.** Ventilated toilet bowl, P (9) 309.
**Herth, G.** Preparation of ceramic raw materials, A (2) 83.
**Hertlein, C. J.** Grinding machine, P (8) 268.
**Hertsriken, S.** See Rudenko, G.
**Hertz, G.** Fluorescent glass, P (6) 218.
**Hertzog, E. S.** See Cudworth, J. R.
**Hertzog, E. S., and Cudworth, J. R.** Friability of Alabama coals, B (7) 260; Grindability of Alabama coals, B (7) 260.
**Herzig, A. J.** See Parke, R. M.
**Herzog, E.** Scientific aspects of pickling of ferrous metals, A (4) 135.
**Herzogenrather Glaswerke Bicheroux & Cie., G.m.b.H.** Tempering glass, P (1) 17.
**Herzogenrather Sekuritglaswerke, G.m.b.H.** Tempering glass, P (9) 306.
**Hess, F. L., and Ralston, O. C.** Lithium in New England, A (10) 339.
**Hess, F. L., and Stevens, R. E.** Rare alkali biotite from Kings Mountain, N. C., A (5) 198.
**Heuer, R. P.** Chrome-magnesia refractory, P (6) 223.
**Heuser, R. V.** Amorphous precipitated silica, P (6) 235.
**Hewit' J. B.** Brickmaking machines, P (9) 311.
**Hewitt, L. C.** Refractory mortars—coating and ramming materials for the foundry, B (7) 255; see Bales, C. E.
**Hew-Schenker, C.** Furnace lining, P (6) 223.
**Hey, M. H.** See Bannister, F. A.
**Heywood, J.** Grinding wheels and their uses: II–X, A (1) 1.
**Hickox, G. H.** See O'Brien, M. P.
**Hicks, V.** See Hull, R. B.
**Hicks, V., McElroy, O., and Warga, M. E.** Quartz in industrial dusts and deposits on human lung tissues—X-ray diffraction, chemical, and spectrographic studies, A (6) 237.
**Hidnert, P.** Thermal expansion and effects of heat treatments on growth, density, and structure of heat-resisting alloys, A (9) 311.
**Hielscher.** Homogeneous clay preparation, A (11) 360.
**Higgins, R.** Metal coating for ceramic bodies, P (8) 283.
**Higginson, G. J.** Plate design, P (4) 131.
**Hill, A. S. G.** Photoelectric smoke penetrometer, A (1) 29.
**Hill, E. L.** Virial theorem and theory of fusion, A (2) 87.
**Hill, E. V.** Rational psychromatics, A (2) 79.
**Hill, H. S., and Williams, C. H.** Valve grinder, P (2) 52.
**Hiller, W. E.** See Kent, B. B.
**Hillers, C. E.** Colored mineral granules, P (1) 47; Colored roofing, P (9) 309.
**Hilton, L. S.** See Kuzmick, J. N.
**Hind, S. R.** See Macey, H. H.
**Hineis, K.** Ceramic facing tile, A (7) 255.
**Hinsey, R. S.** Apparatus for supporting glass sheets, P (3) 102, P (7) 249.
**Hinsley, J. F.** Electrolytic process and apparatus for descaling and cleaning metals, P (2) 54.
**Hirakawa, Y.** Protection of blast-furnace wall, A (7) 254.
**Hirsch, A.** See Elledge, H. G.
**Hirst, A. A.** Coördination of theories of gravity separation, A (8) 284.
**Hirst, L. L.** See Storch, H. H.
**Hiscox, G. D. (editor).** Henley's 20th Century book of formulas, processes, and trade secrets, B (4) 130.
**Hisschemöller, F. W.** Invisible fissures, formation and means of avoiding, A (1) 17; Thermal expansion of paving tile in relation to crystallographic transformation of quartz, B (6) 220.
**Hitner, H. F.** Apparatus for making glass, P (9) 305; see Koupal, W. G.
**Hitzrot, H. W.** Grinding in closed circuit, A (9) 310.
**Hixson, A. W.** See Plechner, W. W.
**Hixson, A. W., and Leudeke, V. D.** Wall friction in liquid agitation systems, A (1) 31.
**Hixson, A. W., and White, G. E.** Accurate determination of dew point, A (10) 333.
**Hoar, T. P.** Pickling of steel, A (6) 213.
**Hobbie, E. H.** Corrugated glass roof, P (1) 15.
**Hobson, R. L.** Chinese ceramics—Cory bequest, A (4) 128.
**Hodge, E. T.** Market for Columbia River hydroelectric power using Northwest minerals: Vol. I, Magnesia; Vol. II, Silica; Vol. III, Limestone; Vol. IV, Northwest clays, B (6) 238.
**Hodge, H. C., LeFevre, M. L., and Bale, W. F.** Chemical and X-ray diffraction studies of Ca phosphates, A (10) 342.
**Hodsman, H. J.** See Clark, A. A.
**Hoeh, A. C.** Grinding machine for reamers, P (1) 3.
**Hoffman, E.** Use of photocells in dispersoid analysis, A (8) 285.
**Hoffman, J. I., and Lundell, G. E. F.** Analysis of phosphate rock, A (8) 291.
**Hoffman, R.** Range design, P (1) 5.
**Hoffmann, F., and Schulze, A.** Determining melting point of Si, A (10) 342.
**Hoffmann, G. F.** Viscosimeter, P (9) 312.
**Hoffmann, J.** Phosphate coloring by metallic atoms and coloring of phosphate glass permeable to ultra-violet rays by P atoms, A (5) 180.
**Hoffmann, J. H.** Apparatus for manufacture of cement, P (6) 212.
**Hofmann, U.** See Maegdefrau, E.
**Hogan, J. H.** Development in design of English glassware in last 100 years, A (8) 269; Glass in modern life: I, A (9) 303.
**Hoggatt, G. A.** Cementitious material, P (3) 95.
**Hohlbaum, R.** Ceramic colors, A (6) 209; Oil firing in glass industry, A (2) 64; Raw oil, fuel oil, and coal-tar oil furnaces in glass industry, A (2) 65; Seedless glass in continuous tanks, A (2) 65.
**Hohmann, F. R.** Sheet-glass apparatus, P (1) 17.
**Hohorst, G., and How, H.-L.** Recovery of $Al_2O_3$ and fertilizers from Chinese alunite: III-e, Extractability of natural alunite with KOH, A (11) 354.
**Hohorst, G., and Wang, H.-H.** Recovery of $Al_2O_3$ and fertilizers from Chinese alunite: III-f, Extraction of $Al_2O_3$ with NaOH after recovery of $K_2O$ and $SO_3$ with $NH_3$, A (11) 354.
**Holbrook, W. F.** Relative desulfurizing power of blast-furnace slags: II, A (8) 292; see Barrett, E. P.
**Holderman, V. N.** Discussion of "Longitudinal brick project," A (6) 220.
**Holland, A. J., and Preston, E.** Microscopical examination and identification of crystalline products in commercial glasses, A (9) 304.
**Holland, A. J., and Turner, W. E. S.** Breaking strength of glass—effect of flaws and scratches, A (1) 11; Effect of transverse scratches on strength of sheet glass, A (9) 302–303.
**Holler, F.** Investigating optimum conditions for cutting off hand-blown hollow glass, A (7) 248.
**Hollinger Mill Staff.** See Longmore, E. L.
**Holloway, H. H.** See Lockett, A. M.
**Holmes, J. G.** Colored glass for lighthouses, A (3) 99.
**Holmes, M. E.** Present ceramic engineering curricula—report of Curricula Committee of Assn. of Ceramic Educators, A (5) 204.
**Holmes, M. K.** See Zimmerman, W. P.
**Holmstrom, A. B., and Wahlberg, O.** Method and apparatus for balancing a grinding wheel, P (11) 346.
**Holt, P. F.** See Briscoe, H. V. A.; Matthews, J. W.
**Holzner, J.** See Behrens, M.
**Hommel, O., Co.** Leadless cast-iron frits, A (6) 213.
**Honegger, P.** Electric smelting furnace cover, P (7) 259.
**Honigmann, E., and Bruckmayer, F.** Dry masonry, P (2) 68.
**Honing, W.** Vehicle headlight, P (10) 328.
**Honiss, W. T.** Apparatus and method for feeding molten glass, P (11) 352; Forehearth for molten glass, P (8) 277; Means of controlling temperature and condition of glass in forehearth, P (1) 16.
**Hood, H. P.** Low-expansion annealed glass, P (4) 140; Low-expansion glass composition, P (5) 183; Preparing silica or glass batches, P (4) 141.
**Hood, H. P., and Nordberg, M. E.** Treated borosilicate glass, P (4) 141.
**Hoon, R. C.** See Puri, A. N.
**Hooper, W. T.** List of works on geology, mining, and engineering of Cornwall in Falmouth Library, A (8) 288.
**Hoover, G. R., and Hoover, M. M.** Producing insulating material, P (1) 48.
**Hoover, M. M.** See Hoover, G. R.
**Hopfield, J. J.** Cutting glass sheets, P (10) 327; Refraction of tempered plate glass, A (1) 13.
**Hopkins, B. S.** See McCarty, C. N.
**Hornke, W.** Specific surface of cement, A (1) 31.
**Hosbein, L. H.** Furnace wall construction, P (5) 189.
**Hossack, J. K.** Cast-iron leadless enamels, A (1) 7.
**Hossack, K. (compiler).** Enameler's dictionary, B (4) 136.
**Hostetter, J. C.** Refractory for contacting molten glass, P (4) 141.
**Hottel, H. C.** See Drew, T. B.
**Hou, K.-C.** See Mattson, S.
**Houchin, L. L.** Lens grinding and polishing machine, P (3) 92.
**Hougen, O. A., and Watson, K. M.** Industrial chemical calculations—application of physicochemical principles and data to problems of industry, B (1) 45.
**Houston, E. C.** See Rankin, H. S.
**Houwink, R.** Elasticity, plasticity, and structure of matter, B (6) 235.
**Hovorka, V.** Separation of Se from Cd, Pb, Bi, Sb, Mo, W, and V, A (2) 86.
**How, H.-L.** See Hohorst, G.
**Howard, E. J., and Dennis, C.** Means for roughing or producing patterns on brick, clay columns, tile, etc., P (1) 32.
**Howard, G. E.** Bottom closure of glassware-forming mold, P (8) 277; Method and

apparatus for forming hollow glass articles, P (1) 16.
**Howard, T. W.** How budget research, A (9) 318.
**Howe, R. E.** Menace to coal industry, A (7) 266.
**Howells, L. T., Scheidt, A. W., and Williams, H. B.** Anhydrous water-soluble silicates, P (5) 202.
**Howes, S. R., and Fox, S., & Co., Ltd.** Machine for grinding, polishing, and burnishing wire, rods, bars, etc., P (8) 268.
**Hoyt, P. S.** Treatment of kyanite ore, P (3) 118.
**Hoyt, S. L.** Metal ceramics molded from powder, A (8) 293; Powder metallurgy—W and other refractory metals, A (8) 293; Resistor alloy, Cr-Al-Fe, A (1) 30.
**Hriber, J.** Grinding device, P (5) 170.
**Hubbard, P. L.** Dithizone method for measuring small amounts of Zn, A (8) 291.
**Hubbell, D. S.** Abrasive member, P (6) 208.
**Hubbell, R. H., Jr., and Ferguson, R. P.** Bauxite as absorbent for percolation filtration, A (6) 229.
**Hübler, A.** Experimental department of German State Technical School for Glass Industry, Steinschönau, A (8) 273.
**Hudson, N. E.** Dust confiner and collector for grinding and polishing machines, P (5) 208.
**Huene, R. von.** Method of estimating finishing birefringence color of a crystal of random orientation in a thin section, A (4) 162.
**Huff, W. J.** Annual report of Explosives Division (fiscal 1937), B (7) 266.
**Huffman, W. D.** Cutting fluids—their use, A (11) 345.
**Hughes, A. C.** Practical system for control of quality of fire clay, B (11) 357.
**Hughes, T. P.** See Bowden, F. P.
**Hugill, W., Ellerton, H., and Green, A. T.** Action of CO on refractory materials: III, Experiments with laboratory prepared specimens; IV, Deposition of C on ferruginous substances, A (7) 253.
**Hugill, W., and Green, A. T.** Action of slags on refractory materials: I, Applying tests to study of action of $CaO$–$Al_2O_3$–$SiO_2$ slags, A (2) 69.
**Huhn, P. J.** Abrading device, P (2) 52.
**Hulbert, G. E.** See Indge, H. S.
**Hull, A. E.** Mixing bowl design, P (5) 172.
**Hull, A. W.** See Burger, E. E.
**Hull, A. W., and Burger, E. E.** Simple strain analyzer for glass seals, A (3) 100.
**Hull, R. B., and Hicks, V.** Universal X-ray photogoniometer, A (1) 31, A (3) 111.
**Humke, H. L.** Outline for employee education, A (3) 122.
**Humphner, F. W.** Decalcomania, P (2) 54.
**Hundeshagen, F.** Silicate formation in lime mortars and sand-lime brick, A (10) 329.
**Hunt, S.** See British Bottles, Ltd.
**Hunt, W. De V.** Surface grinding of hardened steels, A (3) 92.
**Hunt, W. P., and Eipper, D. C.** Honing machine, P (11) 346.
**Huppert, P.** See Grimm, H. G.
**Hursh, R. K., and Filippi, C. R.** Drying characteristics of calcareous surface clay, A (7) 261.
**Hurst, T. L.** See Greaves-Walker, A. F.
**Hussmann, E. L.** Grinder attachment, P (1) 3.
**Hust, W. H.** Pressed glass, A (3) 100.
**Hutchens, E.** Roll grinding machine, P (4) 128.
**Hutcheon, W. M.** See Delamere, R. D.
**Hutchinson, E. H., and Pearson, E. J. & J., Ltd.** Tile or brick for furnaces, P (8) 282.
**Hutchinson, P. H.** Abrading machine, P (9) 295.
**Hutchinson, R., and Newbold, J. A.** Process for purifying silica, P (8) 278.
**Huttenlocher, H. F.** Crystal structure of $AlPO_4$, A (2) 82.
**Hüttig, G. F.** See Fricke, R.
**Hüttig, G. F., Cassirer, S., and Strotzer, E.** Effect of gases on course of reaction between ZnO and $Cr_2O_3$, A (5) 200.
**Huttl, J. B.** Glass sand enterprise on Pacific coast, A (4) 157.
**Hutton, R. S.** Refractories, A (3) 105.
**Huyett, R. B.** Abrasive separating and cleaning apparatus, P (1) 31.
**Hyde, J. F.** Joining glass blocks, P (6) 218.
**Hyde, R. W.** Separating Pb and Cd from Zn ores, P (7) 264–65.
**Hyslop, J. F.** Durability of refractories, A (6) 221; see Stein, J. G., & Co., Ltd.
**Hyslop, J. F., and McMurdo, A.** Thermal expansion of clay minerals, A (4) 158.
**Hyslop, J. F., and McNab, J.** Effect of fluxes on under-load strength of fire clay, A (5) 186, A (8) 280.
**I. G. Farbenindustrie A.-G.** Boron carbides, P (6) 208; Centrifuge for optical determination of size of small particles, P (11) 361; Compound glass, P (11) 352; Extracting bichromates from chromic salts, P (11) 367; Manufacture of boron carbides, P (11) 346; Manufacture of synthetic spinels, P (6) 235; Manufacture of pure alumina compound by heating clay to 1000°C, P (9) 309; Method and agent for removing enamel, P (1) 10; Phosphate glasses for parts exposed to vaporous alkali, etc., P (9) 306; Photoluminescent glass, P (5) 183; Processes involving melting of boric acid, borax, or phosphates, P (6) 235.
**I. G. Farbenindustrie A.-G. and Eisenwerk Kaiserslautern.** Enameling iron, P (10) 325; Enamels, P (6) 213.
**Ignat'eva, L. P.** See Zhilin, A. I.
**Ignatieff, V.** Determining ferrous iron in soil solutions and effect of light on reduction of Fe by citrate and 2:2′-dipyridyl, A (9) 316.
**Iimori, S.** See Iwase, E.
**Iimori, S., and Yoshimura, J.** Cathodoluminescence spectra of feldspars and other alkali aluminosilicate minerals, A (9) 313.
**Ilgenfritz, C. B., and Slick, E. E., Jr.** Designs for combined butter and almond tub, deep bowl, milk pitcher, nappy, oval relish tray, sugar bowl, and tumbler, P (1) 5.
**Ilsley, L. C., Gleim, E. J., and Brunot, H. B.** Permissible electrically operated post drills and drilling machines, B (8) 286.
**Iltchenko, N., and Lafuma, H.** Theory of hydraulic binding agents, A (2) 56.
**Imperial Chemical Industries, Ltd.** Extracting $SO_2$ from gases, P (11) 363; see Roberts, J. H.
**Imperial Institute.** Mineral position of British Empire, B (1) 40.
**Inamura, Y.** See Kondo, S.
**Indge, H. S.** Abrasive wheel and mount, P (5) 169; Grinding wheel reciprocating mechanism, P (11) 346; Lapping machine, P (3) 92.
**Indge, H. S., and Hulbert, G. E.** Footstock for cam lapping machines, P (7) 241.
**Ingerson, E.** See Morey, G. W.
**Ingouf, R. J. A.** Continuous process for making sheets of multicellular glass, P (8) 277; Multicellular glass sheet manufacture, P (9) 306.
**Ingram-Richardson Mfg. Co.** Enameling large sheets, A (2) 57; Porcelain enameling u it to fire 6- x 12-ft. sheets, A (1) 9
**Innes, W. P., Jr.** Spark plug, P (8) 283.
**Inoue, S.** See Sawai, I.
**Insley, H.** See Hall, F. P.
**Insley, H., and McMurdie, H. F.** Mino constituents in Portland cement clinker, A (5) 173.
**Ippersiel, P.** Extraction of alumina from clay, kaolin, bauxite, etc., P (1) 24.
**Irving, J.** See Larsen, E. S.
**Irwin, D. A.** See Denny, J. J.; Jephcott, C. M.
**Irwin, J. T.** See Chester, A. E.
**Irwin, J. T., and Bevis, R. E.** Modification of Bingham plastometer, A (3) 111.
**Isenhour, J. H.** Stoker-fired round downdraft kilns, A (7) 260.
**Ishiguro, K.** See Okaya, T.
**Iskül, E. W.** See Grigor'ev, D. P.
**Ismail, A. M., and Harwood, H. F.** Determination of K as K Ag cobaltinitrite, A (1) 43.
**Isobe, J., Fukagawa, T., and Kondo, S.** Errors in methods of proportioning raw materials in potteries and a reliable method, A (2) 76.
**Isomatsu, M.** Bentonite in Japan, A (3) 115.
**Iterson, F. K. T. van.** Separation of substances by flotation, A (6) 238.
**Itkina, E. Ya.** See Strokov, F. N.
**Ito, S.** Physical properties of steatite products, A (2) 77.
**Ivanov, D. P.** See Krasikov, S. E.
**Ivanova, V. P.** See Belyankin, D. S.
**Ivaschev, V.** Grinding or scraping, A (3) 92.
**Iwase, E., and Iimori, S.** Cathodoluminescence of $CaSiO_3$, A (9) 313.
**Iwase, K., and Nisioka, U.** Equilibrium diagrams of binary systems (1) $CaO$·$SiO_2$–$TiO_2$–$MgO$·$TiO_2$, (2) $CaO$·$MgO$·$2SiO_2$–$MnO$·$TiO_2$, and (3) $CaO$·$SiO_2$–$2CaO$·$Fe_2O_3$, A (11) 365.
**Jackson, A.** Influence of nozzle refractories on teeming speeds of ingots, A (2) 72.
**Jackson, C. d'O. P.** Medicine bottle design, P (9) 298.
**Jackson, F. H.** Paving-brick specifications, A (6) 220.
**Jackson, J. G.** Baking pan, centering pan, and seamless baking pan sets, P (7) 246.
**Jackson, P. G.** Determination of minute quantities of Pb, A (9) 316.
**Jackson, W.** Recent progress toward correlation of chemical and physical constitution and electrical properties of solid dielectric materials, A (2) 65.
**Jacobi, J.** Colored engobes and engobing technique, A (6) 223; Device for automatic coating of brick with engobe, P (11) 361.
**Jacobs, F. B.** Finishing Mn steel parts by grinding, A (1) 1; Precision operations in making large roller bearings, A (10) 321.
**Jacobs, H.** See Nel, L. T.
**Jacobson, R. D.** See Weber, H. C.
**Jacoby, H. S.** Relation of research to chemical plant construction, A (6) 238.
**Jacques, A. T.** Studies and experiments with refractory materials at Spetzstal plants, A (5) 189.
**Jaeckel, H. J.** Ball mill, P (3) 112.
**Jaeger, G.** Process for manufacture of alkali metal Be fluorides, P (10) 343.
**Jagitsch, R.** Investigation of system MgO–water, A (11) 347.
**Jäkel, E.** See Krause, O.
**Jakob, J.** Alkali content of kyanite, A (9) 307.
**Jakobson, T.** Permeability of Plexi glass for ultra-violet light, A (4) 139.
**Jamar, F.** See Gilard, P.
**Jamison, E. A., and Gerstell, W. D.** Liquefied gas for ceramic firing, A (11) 362.
**Jander, W., and Weitendorf, K. F.** Reactions in solid state at higher temperatures: XII, Course of reactions, A (3) 120.
**Jander, W., and Wuhrer, J.** X-ray examinations of tricalcium silicate, A (9) 317.
**Jansen, H.** Tile, P (1) 25; Tile block, P (10) 329.
**Japhe, D.** Alkali estimation in silicates, A (10) 342; Determination of alkalis in silicates, A (10) 342.
**Jarman, G. W., Jr.** Metallizing in pottery industry, A (10) 332; Special methods for concentrating and purifying industrial minerals, A (11) 364; see Sutton, H. M.
**Jarrier, P.** Heat losses in boiler furnaces, A (6) 236.
**Jaspers, M. J. M.** Chemical constitution of Portland cement and development of its technical properties—special cements, A (5) 172.
**Jay, A. H., and Chesters, J. H.** X-ray survey of refractories, A (4) 146.
**Jay, A. H., and Lee, L.** Testing and properties of heat-insulating materials, A (4) 145, A (8) 281.
**Jay, A. H., *et al.*** Discussion of "Reliability of thermal conductivity measurements for insulating materials," A (7) 254.
**Jayaraman, N., and Krishnaswami, K. R.** Chemical and mineralogical study of a Ti mineral from Nellore, A (7) 261.
**Jeanton, G.** Andirons, A (2) 53.
**Jebens, A. C.** Blast-furnace glass, A (6) 214.
**Jebsen-Marwedel, H.** Chemistry of glass-furnace construction: I, Slagging processes above the melt, A (5) 176; II, Influence of surface tension of slag glass from refractory material on its tendency to form nodes and cords, A (5) 177; Influence of surface tension in glassmelting processes, A (9) 304; Manufacturing defects of glass as basis of its technology, A (3) 99; Technical snapshots of glass, A (5) 181.
**Jefferies, E. J.** Simple super-centrifuge for continuous treatment of liquids, A (1) 30.
**Jeffrey Mfg. Co.** Precision weighing machine, A (11) 360.
**Jeffries, W. J.** See Sherman, J.
**Jeffries, Z.** See Compton, K. T.
**Jellinghaus, W.** System Fe–Co–Cu, A (5) 175.
**Jelpke, E. E.** Gloss meter, A (10) 334.
**Jenaer Glaswerk Schott & Gen.** Borosilicate glass, P (2) 67; Borosilicate glasses highly resistant to alkaline liquids, P (4) 140; Heat-absorbing glasses, P (2) 68, P (8) 277.

**Jenckel, E.** Character of transformation point, A (10) 325.
**Jenckel, E., and Schwittmann, A.** Determination of transformation point of glasses from viscosity measurements, A (9) 302.
**Jenkins, A. F.** Spray gun, P (6) 227.
**Jenkins, D. A.** See Brown, T. A.
**Jenkins, S. M.** Insulating panel for open-hearths saves brick, A (10) 330; Insulation of soaking pits improves operation, A (1) 19.
**Jennings, D. S.** See Peterson, J. D.
**Jensch, H.** See Reininger, H.
**Jephcott, C. M., Gray, W. M., and Irwin, D. A.** Study of crystalline siliceous minerals in silicotic lungs by X-ray diffraction method, A (8) 294.
**Jersey, N. E.** Earth working tool, P (6) 227.
**Jesien, W. S.** Earthenware and stoneware industry of Westerwald, Germany, A (3) 108.
**Jessen, F. W., and Lightfoot, J. H.** Compressibility of butane-pentane mixtures below 1 atm., A (8) 287.
**Jesser, L.** Cement hardening—electrostatic phenomenon, A (2) 55.
**Jirik, F. X.** Glass decorative methods in Bohemia in Empire and Biedermeier periods, A (8) 274.
**Jobling, J. A., & Co., Ltd., and Jobling-Purser, E. J.** Manufacture of glass pipes, P (6) 219.
**Jobling-Purser, E. J.** See Jobling, J. A., & Co., Ltd.
**Jochman, F.** What can be detected from chemical analysis of glasspots—practical interpretations, A (7) 249.
**Joffe, J. S.** See Kardos, L. T.
**Johannsen, A.** Descriptive petrography of igneous rocks: Vol. IV, B (8) 290.
**Johanssen, J. K.** Flotation of nonsulfidic minerals, A (5) 193.
**Johns, E., & Co., Ltd., and Corn, E. R.** Fixing and securing lavatory basins and holders and supports for toilet articles to walls, P (10) 333.
**Johnson, A. K.** Brick gutters in Queens Boulevard, A (4) 141.
**Johnson, A. M.** Honing machine, P (4) 128, P (6) 208, P (7) 241; Machine tool, P (4) 128.
**Johnson, A. S.** Abrading tool, P (1) 3.
**Johnson, B. L., and Davis, A. E.** Abrasive materials, B (11) 346.
**Johnson, B. L., and Warner, K. G.** Talc, pyrophyllite, and ground soapstone, B (11) 365.
**Johnson, C.** Drawing compounds in relation to cleaning, A (10) 324; Films and their relation to cleaning before electroplating, A (8) 271.
**Johnson, C. E.** Building block, P (2) 67.
**Johnson, C. O.** Buffing or polishing machine, P (1) 3.
**Johnson, Carl W.** Grinder for slicer blades, P (1) 3.
**Johnson, Charles W.** Manufacturing glassware, P (11) 352; Nonrefillable bottles and stopper, P (10) 328.
**Johnson, F. E.** Grinding machine, P (2) 52.
**Johnson, F. W.** Adsorbed moisture films on surface of glazed porcelain, A (11) 358.
**Johnson, J.** Chimney pots, P (11) 358.
**Johnson, J. M.** See Lauck, A. G.
**Johnson, J. S.** Correlation of electrical and thermal properties of brick, A (4) 141.
**Johnson, N. G.** Influence of chemical binding on $K\alpha_{1,2}$ doublet of Si, A (2) 85.
**Johnson, R. M.** Keep down cost of snagging and billet grinding, A (1) 2.
**Johnson, S. B.** See Webb, H. W.
**Johnson, T. J.** See Craft, B. C.
**Johnson, W. G.** Thermal conductivity at high temperatures, A (5) 193.
**Johnson, W. T.** Plate design, P (1) 5.
**Johnson, Matthey, & Co., Ltd.** See Allen, L.
**Johnston, R. W.** See Webb's Crystal Glass Co., Ltd.
**Jollie, A.** Apparatus for drawing glass strips, P (5) 182; see Pilkington Bros., Ltd.
**Jones, E. B.** Treatment of plastic materials for producing brick, tile, etc., P (8) 282.
**Jones, F. L.** Determining size of fine abrasive powders–microprojection and sedimentation methods, A (5) 169.
**Jones, F. W.** Measurement of particle size by X-ray method, A (11) 360.
**Jones, J. C.** See Churchill Machine Tool Co., Ltd.
**Jones, M. W., and Blair, J. M.** Cutting glass, A (7) 247.
**Jones, O. L.** High-temperature insulating composition, P (3) 107; Refractory insulation, P (9) 309.
**Jones, W. B.** Glass sands of Alabama, A (10) 339.
**Jones, W. R.** Ore microscopy—practical applications, A (8) 289; see Brammall, A.
**Jones & Lamson Machine Co.** Grinding or abrading machines, P (9) 296; Grinding machine, P (5) 170.
**Jooris, A.** Electric furnaces for firing decorations on porcelain and glass, A (3) 112.
**Jordan, A. T., and Lever, P.** Machine for cutting spectacle lenses, watch glasses, etc., in accordance with a pattern or former, P (10) 328.
**Jordan, G.** Tubes of hard porcelain, A (10) 332.
**Jost, W.** Diffusion and chemical reaction in solid phase, B (8) 292.
**Judd, D. B.** Inter-Society Color Council, A (11) 367; Optical specification of light-scattering materials, A (1) 29.
**Judd, D. B., Harrison, W. N., and Sweo, B. J.** Optical specification of vitreous enamels, A (2) 57.
**Jue, L. R.** See Baker, C. L.
**Jukes, H.** See Kent, B. B.
**Julien, A. P.** See Keene, P. A.
**Jung, K.** Adjusting devices for grinding-machine tools, P (10) 322.
**Juredine, G. M.** See O'Brien, J. J.

**K.** Artificial drying of brick, A (11) 359.
**Kadri, V.** Abrading machine, P (9) 295.
**Kaempfert, W.** Science, invention, and society, A (2) 89.
**Kahle, K. M.** Chimneys of Old Spain and England, A (7) 252.
**Kahler, H. L.** See Sheen, R. T.
**Kainarskii, I. S., and Bron, V. A.** Tarasov sandstone as raw material for silica brick, A (6) 222.
**Kalkusch, R.** Building block and tile, P (6) 220.
**Kallauner, O.** Flaws in brick, A (7) 252; Mineral wealth of Slovakia, A (7) 262; Sikarbid, A (7) 254; Unified testing of refractory building materials, A (7) 255; Uniform classification of ceramic plastic clays, A (6) 231, A (8) 290.
**Kallenberger, R. H.** See Storch, H. H.
**Kamei, S., and Shiomi, S.** Drying of solid bodies: XVI–XXV, A (5) 193.
**Kamerer, J. W.** Safety glass heating method, P (10) 328.
**Kametskii, S. P., and Kashcheev, N. F.** Alumina and NaOH, P (5) 170.
**Kamita, K., Yamamoto, H., Matsuo, M., Yagai, H., and Ota, H.** Chemical composition of glasses for manufacturing window glass by automatic drawing process, A (1) 11.
**Kamoshita, Y.** Effect of heating on exchange capacity of soils, A (5) 200.
**Kamp.** Problem of fishscales in sheet-iron enameling, A (2) 58.
**Kämpfer, A.** Apparatus for making non-splintering glass, P (5) 182; Laminated glass, P (6) 218; Manufacture of compound glass, P (8) 278; Manufacture of laminated glass, P (2) 68; Press for manufacture of multilayer shatterproof glass, P (10) 328; Production of compound glass, P (1) 17.
**Kanakaratnam, M.** See Dube, V. S.
**Kandeřábek, F.** Kiln construction, A (7) 260.
**Kanno, T.** Moduli of elasticity and rupture of electrical porcelain, A (4) 147.
**Kaplan, E.** Chemical determination of quartz (free silica) in dusts, A (10) 342.
**Kapur, P. L.** See Vajnik, N. A.
**Kardos, L. T., and Joffe, J. S.** Preparation, composition, and chemical behavior of complex silicates of Mg, Ca, Sr, and Ba, A (8) 289.
**Kargin, V. A.** See Berestneva, Z. Ya.
**Karklit, A. K.** See Poluboyarinov, D. N.
**Karmaus, H. J.** Mechanical development of enamel industry (1927–1937), A (8) 271; Technical development in enamel operation, A (1) 9; Vitreous enameling in Germany, A (10) 325.
**Karsten, A.** Microscope—application in mineralogic and geologic investigation, A (1) 29.
**Kasch, C. H.** Grinding machine, P (5) 170.
**Kashcheev, N. F.** See Kametskii, S. P.
**Kastens, W. H.** Abrading machine, P (1) 3.
**Kästner, F.** Science and practice in heavy ceramics, A (2) 89.
**Katayama, J.** See Nagai, S.
**Kato, H.** Quantitative separation of metals by $H_2S$: I, Separation of Zn from Ni; II, Separation of Zn from Co and precipitation of Ni and Co sulfides, A (11) 366.
**Kato, K.** Plate design, P (7) 244.
**Kato, T.** Preservation of standard solution of $KMnO_4$, A (6) 233.
**Katoh, S.** See Koyanagi, K.
**Katyshev, P. I.** See Rybnikov, V. A.
**Katz, D. L., and Hachmuth, K. H.** Vaporization equilibrium constants in crude oil-natural gas system, A (1) 34.
**Katzinger, A.** Centering pan set, P (7) 246.
**Kauffman, H. L.** Art of treating oil-decolorizing clays, P (8) 294.
**Kauffman, J. R.** Tile vs. nonceramic substitutes, A (3) 107.
**Kauffmann, A.** Flue liner, P (11) 358.
**Kaunitz, H., and Marko, A.** Ultracentrifuge of high efficiency, A (5) 194.
**Kautz, K.** Chemical determination of metallic particles and oxides of Fe, Ni, and Co in fired ground coats, A (10) 324; Enameling, P (2) 59; Random experiments on enamel adherence, A (10) 325; Reply to Staley's discussion of "Critical analysis of statements and experiments on adherence of sheet-steel ground coats," A (10) 325.
**Kawashima, C.** See Kondo, S.
**Kazanov, E. I.** Solubility of oxides in cryolite, A (2) 86.
**Kazantsev, V. G.** Abrasive wheels, P (7) 241.
**Keefer, W. L.** Abrading apparatus, P (4) 128, P (7) 240.
**Keen, A. W.** Glass nozzle, P (9) 305.
**Keenan, J. A.** Abrading apparatus, P (1) 3.
**Keene, P. A., and Julien, A. P.** Dense soda ash manufacture, P (10) 343.
**Keens, J. H.** Glass bottle design, P (9) 298.
**Keevil, N. B., and Thorvaldson, T.** Hydration of dicalcium silicate and tricalcium silicate, A (3) 94.
**Kefeli, A. A.** See Vargin, V. V.
**Keler, E. K.** Density of grog in relation to its granulometric composition, A (6) 221.
**Keller, F.** Crazing and flaking of majolica fireplaces, A (1) 8; Difficulties in enameling cast iron, A (6) 212.
**Keller, W. D.** Clay colloids as cause of bedding in sedimentary rocks, A (1) 35; Sandstone-covered Missouri flint clay pit, A (10) 341; see Tarr, W. A.
**Kelley, W. P., and Dore, W. H.** Clay minerals of Calif. soils, A (11) 363.
**Kelly, A.** Blasting or cleaning castings for enameling, A (9) 299.
**Kelly, R. A.** Designs for: ashtray, P (3) 93, P (6) 211; goblet, P (3) 94, P (7) 244; plate, salad plate, torte plate, P (3) 94; candlestick, covered candy jar, covered dish, covered jar, P (4) 130; cream pitcher, cup, mayonnaise bowl, salt shaker, P (4) 131; relish tray, P (5) 172; bobèche, bottle, console bowl, salad bowl, tumbler, P (6) 211.
**Kelsey, V. V.** Franklin Institute, A (7) 265.
**Kemmer, N.** See Azarov, K. P.
**Kempe, H. R., and Hanneford-Smith, W.** Engineer's yearbook of formulas, rules, tables, data, and memoranda for 1937, B (2) 90.
**Kendall, V. V.** Correlated abstract on corrosion and corrosion-resistant metals and alloys, A (4) 149.
**Kennedy, J. J.** Cleaning and polishing block, P (5) 170.
**Kennedy, R. G., Jr.** Microstructures of Mo-Max and 18-4-1 compared, A (4) 151.
**Kennedy, R. K.** Finishing cylindrical work by burnishing rollers, A (7) 239.
**Kennedy, T. D., and Keon, J. J.** Ball mill, P (1) 31.
**Kennedy, W. L.** Jar design, P (5) 172.
**Kent, B. B.** Mill-room practice, A (10) 325; see Murdoch, H. B.
**Kent, B. B., Gray, J. H., Bradley, H., McArthur, T. J., Jukes, H., Hiller, W. E., and Whittle, N. H.** Mill-room practice, A (10) 325.
**Keon, J. J.** See Kennedy, T. D.
**Keppeler, G.** Composition and properties of chief commercial glasses, A (7) 247; Investigations on clay minerals, A (11) 363; Surface tension of glass, A (8) 275.
**Keppeler, G., and Schmidt, H.** Liquefaction and temporary thickening of clay slips, A (1) 37.
**Keppler, P. W.** Combustion instruments and control at Hell Gate, A (6) 236.

**Keramet Ges. für Keramisches Metall Ges.** Manufacture of mixed carbides, P (6) 208.
**Keramische Industrie-Bedarfs-A.-G.** Automatic feeding device for glassmelting furnaces, P (5) 182.
**Kernan, A. R.** Furnace regenerator, P (1) 24.
**Kerr, P. F.** Attapulgus clay, A (1) 35; Decade of research on clay, A (9) 313.
**Kerr, W. A., and Grubbs, R. A.** Grinding wheel, P (8) 268.
**Kesper, J. F.** Industrial grinding and mixing of loam, clay, and grog in modern brick plants, A (8) 284.
**Kessler, F.** See Rummel, K.
**Ketelaar, J. A. A.** Crystal structure of K, Rb, Cs, and Tl fluosilicates and of $LiMnO_4 \cdot 3H_2O$, A (2) 84.
**Key, A. L.** Bottle design, P (1) 5.
**Kheifets, E. I.** See Sharfshtein, A. I.
**Khigerovich, M. I.** See Ordynskaya, E. S.
**Khvass.** Application of enamel coats by spraying, A (1) 7.
**Kidder, M. H.** Cleaning and preparation of metal parts, A (3) 96.
**Kieffer, E.** See Czech, J.
**Kiess, C. C.** Infra-red spectra of Fe, Ti, and C, A (4) 162.
**Kieskalt, S.** Rapid drying with pulsating circulating air, A (2) 79.
**Kiessling, O. E.** See Yaworski, N.
**Kilian, G.** Drawing sheet glass, P (6) 217.
**Killefer, D. H.** Sandpaper, A (1) 2.
**Kimble, H. K., and Richter, H.** Method and apparatus for shaping bodies, P (3) 102.
**Kimble Glass Co.** Method and apparatus for making glass tubes and rods, P (11) 352.
**Kimura, K.** X-ray spectrographic determination of La, Nd, and Gd in presence of other rare earths, A (7) 264.
**Kind, V. A.** See Aksenov, V. I.
**Kind, V. A., Zhuravlev, V. F., and Gordon, M. M.** Formula for determining output of multichamber cement mills, A (6) 212.
**Kindt, B.** Behavior of glass under mechanical processes, A (2) 60; Realization of efforts of technical group, "glass art work," A (5) 171.
**King, E. J.** Solubility of silica dusts, A (9) 319; see Brammall, A.
**King, G.** See United Glass Bottle Manufacturers, Ltd.
**King, G. N.** Jug design, P (10) 323.
**King, H. H.** See Perkins, A. T.
**King, J. A.** Specialized electric-furnace refractories, A (1) 22.
**King, J. G.** Distribution and properties of British coals, A (9) 312.
**King, R. M.** Age-old porcelain enamel finds machine uses, A (9) 299; Sheet-steel ground coat enamels, A (5) 174.
**King, W.** Elliot bequest of English porcelain and pottery, A (10) 323.
**Kingscliffe Insulating Products, Ltd., and Marshall, A.** Manufacture of refractory brick, P (2) 75.
**Kinney, F. D.** Multifocal lens, P (9) 306.
**Kinzie, C. J.** Coherent porous Zr silicates, P (2) 87; Double silicates of Zr, P (11) 367; Opaque vitreous enamel, P (3) 98; $ZrO_2$ opacifier, P (2) 59; $ZrO_2$ vitreous enamel opacifier, P (3) 98.
**Kinzie, C. J., and Hake, D. S.** Preparation of a Zr oxycarbide and SiC, P (5) 203.
**Kinzie, C. J., and Wainer, E.** Hydrated Ti-Fe arsenates, P (3) 121; Separating brookite and rutile from zircon and obtaining $TiO_2$, P (11) 365.
**Kippe, O., and Klöckner-Werke, A.-G.** Manufacture of lime-free magnesia, P (8) 292; Manufacture of magnesia, P (8) 282.
**Kircher, W.** Testing materials by colored light, A (1) 47.
**Kirichenko, N.** Spherical checker brick for hot stoves, A (10) 331.
**Kirk, W. S.** See Rabezzana, H.
**Kirkland, A. J.** Grinder and sharpener attachment for meat grinders, P (2) 52.
**Kirkpatrick, H. L.** See Craft, B. C.
**Kirnbauer, F.** Productive feldspar and kaolin deposits in Europe—economical importance, A (5) 197.
**Kirst, H.** Deënameling, A (4) 134; White opacification of enamel, A (11) 349.
**Kirwan, G. M.** See Perry, J. B.
**Kir'yanova, A. G.** See Laptev, F. F.
**Kiryushkin, V. A.** See Lyutin, L. V.
**Kissin, D. A.** Theory of drying of magnesite products, A (6) 222.
**Kisslov, V. P.** Permeability of materials for thermic rays, A (4) 139.
**Kitaigorodskii, I. I.** Intensification of glass-melting processes, A (1) 12.
**Kitaigorodskii, I. I., and Zisserson, L. B.** Removing Fe oxides from glass melt, P (7) 251.
**Kjaer, E.** See Andreasen, A. H. M.
**Kjellgren, B. R.** See Sawyer, C. B.
**Klayt, H.** Saucer for cup, P (2) 77.
**Kleber, W.** Le Chatelier—significance for mineralogy and petrography, A (1) 37.
**Klein, C. E.** See Eldridge, H. B.
**Klein, H. C.** Handling waste acids from pickling operations, A (6) 213.
**Klein, N. W.** See Winter-Klein, N.
**Kleinberg, I. T.** Microscopic investigation of acid-stable ceramic bodies, A (1) 25; see Goncharov, V.
**Kleinschmidt, B.** Abrasive handbook, Vols. I–IV, B (1) 2.
**Klesper, R.** Hand and machine shaping of grog brick, A (2) 71.
**Klikovka, K. N.** Apparatus for concentrating kaolin, P (8) 286.
**Klinkenberg, L. J.** Isomorphism and oversaturation, A (5) 200.
**Klöckner-Werke, A.-G.** Manufacture of sintered dolomite, P (9) 309; see Kippe, O.
**Kloubek, J.** See Straka, V.
**Kloubek, J., and Weiner, B.** Production of foam glass, P (11) 352.
**Kiyachko, Yu. A., and Gurevich, E. E.** Analytical determination of $Al_2O_3$, A (2) 8.
**Klyucharov, Ya. V.** High $Al_2O_3$ bodies: VII. Technical properties, A (1) 19; Materials with high $Al_2O_3$ content, A (2) 72.
**Klyucharov, Ya. V., and Levenshtein, S. A.** High $Al_2O_3$ masses, A (2) 71.
**Klyucharov, Ya. V., and Voronin, I. I.** High $Al_2O_3$ bodies: VI. Coarse-grained andalusite bodies, A (1) 19.
**Knaell, K. K.** See Blau, H. H.
**Knapp, F.** Possible use of powdered glass in ceramic industry, A (6) 237.
**Knapp, O.** Egyptian "nummi vitrei," A (8) 269; Glasses of special composition, A (5) 178; Luminescent glasses, A (3) 99; Optical glasses, A (11) 351; Sheet glass permeable to ultra-violet rays, A (11) 351; Technical glasses containing boric acid, A (2) 66, A (4) 139.
**Kneisley, R. F.** Dust extracting method, P (5) 194.
**Kneppó, E.** See Buzágh, A. v.
**Knibbs, N. V. S., and Pehrson, A. P.** Colliery shale utilization, P (4) 133.
**Kniel, W., and Spingler, K.** Electrical power transmission in brick plants, A (8) 284.
**Knight, A. B.** Advantages and uses of oilstones, A (11) 345.
**Knote, J. M.** Making cellular refractory bodies, P (9) 308.
**Knowles, J. A.** Walpole's collection of stained glass at Strawberry Hill, A (7) 249.
**Knuth, K.** High-quality (Corhart) tank blocks, A (2) 71.
**Kobayashi, T.** See Tabata, K.
**Kobeko, P., Kuvshinskii, E., and Gurevich, G.** Investigation of amorphous state, A (4) 162.
**Koch.** Honing of cylinder bores, A (1) 1.
**Koch, A. J.** Plate design, P (9) 298.
**Koch, B.** Heat-transmission value and heat capacity, A (6) 228.
**Koch, R.** Ceramic materials of old Louisiana buildings, A (10) 329.
**Kodak (Australasia) Pty., Ltd.** Glass, P (7) 250.
**Koenig, C. J.** Use of nepheline syenite in ceramic products, A (9) 309.
**Koenig, J. H.** Lead frits and fritted glazes, B (1) 26.
**Koeppel, C.** Refractory construction materials, B (8) 308.
**Kogan, L. S.** See Aksenov, V. I.
**Kogan, N. A., and Levi, L. I.** Apparatus for determining gas permeability, A (2) 77.
**Kohl, W. R.** Bottle design, P (2) 54, P (5) 172.
**Kohr, R. M.** See Sucetti, G.
**Kolb, F. P.** Reflector, P (3) 102.
**Koller, R.** Care of transmission belts, A (5) 192.
**Kondo, S.** See Isobe, J.
**Kondo, S., Kawashima, C., and Tanahashi, J.** "Jomon-Doki," a prehistoric earthenware: III, A (2) 53.
**Kondo, S., Kawashima, C., and Wakabayashi, A.** Glost warping of glazed ware, A (2) 76.
**Kondo, S., and Suzuki, S.** Load-bearing ability of ceramic products at high temperature—method for testing, A (5) 187; Talc porcelain: IX–XII, A (5) 191.
**Kondo, S., and Yamauchi, T.** Inversion of quartz to tridymite: XIII–XIV, A (5) 200; $2CaO \cdot Al_2O_3$ a chemical compound, A (2) 87.
**Kondo, S., Yamauchi, T., and Inamura, Y.** Hydraulic refractory cements: I, Preparation of highly aluminous Ca aluminates; II, Change of strength on heating; III, Refractory properties and preparation of cements, A (4) 131–32.
**Kondo, S., Yamauchi, T., and Kora, Y.** Inversion of quartz to tridymite: VI–XII, A (5) 200.
**Kondo, S., Yamauchi, T., and Sumizawa, R.** Influence of calcining temperature of $CaCO_3$ on properties of quicklime obtained, A (2) 55.
**Kondo, S., and Yoshida, H.** Modulus of elasticity of magnesite refractories: I, Importance and apparatus for measurement, A (2) 73; II–III, A (3) 104; IV, Moduli at high temperatures, A (2) 73.
**Kondor, E.** Silica brick, A (8) 281.
**König, R., and Stuckert, L.** Suitability of Pfahl quartz for manufacturing silica brick, A (6) 220.
**Konigswarter, W., and Fejes, L.** Production of safety glass, P (1) 17.
**Konopicky, K.** Sintered magnesite: II, Sintering process, A (2) 74; III, Sintering process in magnesite containing unevenly distributed constituents, A (11) 356.
**Koons, B. H.** See Moore, J. E.
**Kopcewitz, T.** Influence of temperature on Raman frequencies of topaz, beryl, and calcite, A (1) 43.
**Kopka, G.** Technical progress of Czechoslovak porcelain industry since 1927, A (7) 257.
**Kora, Y.** See Kondo, S.
**Körber, F.** Influence of impurities on reactions between Fe melts, Fe-Mn silicates, and solid silica, A (6) 233.
**Kordes, E.** Crystal and chemical studies of Al compounds with a spinel lattice and of $\gamma$-$Fe_2O_3$—mineralizing effect of fluorides, A (2) 84.
**Koren, W. A.** Pulverizers with air separation and drying, A (10) 335.
**Koritnig, O. T.** Recent developments in spray painting in pattern making, A (11) 360; Thermal efficiency of revolving furnaces for melting enamel, A (5) 175.
**Kormer, I. M.** See Lyutin, L. V.
**Kornmesser, G. C.** Use of porcelain pipes for hot-spring piping, A (7) 256.
**Korolev, S. I.** Chamber for drawing glass tubes and rods, P (7) 249; Equipment for drawing double-layer glass in horizontal direction, P (7) 250.
**Korshunova, A. I.** Bicalcium silicate, A (8) 291.
**Kortt, E. O.** See Tabakov, Z. Ya.
**Kortt, E. O., and Druzhnikova, A. V.** Tests with unfired brick M-50 of the Magnesite plant in Siemens-Martin furnaces, A (1) 23.
**Kostellow, R. R.** Designs for: decanter, P (6) 211, P (10) 323; goblet, P (5) 172, P (6) 211, P (7) 244, P (8) 271, P (9) 298, P (10) 323; plate, tumbler, P (5) 172; jug, vase, water pitcher, P (7) 244.
**Koster, W.** X-rays for research in metallography, A (11) 367.
**Kostina, T. Z.** See Kurchatov, I. V.
**Kostsov, N. S.** See Tkachenko, L. M.
**Kotowski, S. K.** Glass sheet supporting means, P (2) 68.
**Kotterba, M.** Drying plant for pottery, P (5) 194.
**Koupal, W. G., and Hitner, H. F.** Apparatus for making sheet glass, P (7) 249.
**Kouwenhoven, W. B., and Vivell, A. E.** Alternating-current nondestructive test for welded seams, A (3) 95.
**Kovache.** Combustion temperature of solid and gaseous fuels, A (6) 227.
**Kovács, J.** Enameling iron, P (8) 272.
**Koyanagi, K., Katoh, S., and Sudoh, T.** Cement constitution, A (6) 211.
**Kozakevich, S. S.** Quality control of refractory mortars, A (2) 74.
**Kozhin, N. P.** See Vargin, V. V.
**Kozhina, E. I.** See Grigor'ev, P. N.
**Kozlov, V. I.** Thermally stable magnesite refractory, A (1) 23.
**Kracek, F. C., Bowen, N. L., and Morey, G. W.** Equilibrium relations and factors influencing their determination in system $K_2SiO_3$–$SiO_2$, A (4) 161.
**Krahenbuhl, F., and Meier, M.** Means for sharpening scissors, P (4) 128.
**Kraissl, F.** Pyrex brand drier tube, A (2) 64.
**Krakau, K. A., Mukhin, E. J., and Heinrich,**

**M. S.** Equilibrium diagram of ternary system $Na_2SiO_3$–$PbSiO_3$–$SiO_2$, A (1) 43.
**Krämer, O.** Polishing and buffing in electroplating industry, A (10) 321.
**Kraner, H. M.** Ceramic composition, P (8) 283; Considerations in production of fused mullite for refractories, A (11) 354; Development of slagging test for refractories, A (8) 280.
**Krasikov, S. E., and Ivanov, D. P.** Glass sintering in manufacture of glass apparatus, A (2) 63.
**Krasnyanskaya, V. M.** See Efremov, G. L.
**Krause, D. E.** Vitreous enameled products, P (5) 176.
**Krause, H.** Drying ceramic products, A (10) 334; Grinding and polishing of Al, A (3) 91.
**Krause, O.** Relationships between grain size of quartz and properties of hard porcelain: I–II, A (6) 224.
**Krause, O., and Jäkel, E.** Ceramic firing: VII, Steatite, data and methods used; VIII, Structural changes; IX, Sintering processes; X, Properties of steatite; XI, Summary and conclusions, A (2) 81.
**Kraut, F., and Vatan, A.** Origin of clayey rocks near Confolens (Charente) ascribed to the siderolithic, A (7) 262.
**Krautheim, A.** See Gerth, W. H.
**Krchma, I. J.** Decomposition of Ti ores, P (7) 263; see Booge, J. E.
**Kreidl, A.** Pretreating iron surfaces, P (3) 98.
**Kreidl, I.** Clouded enamel production, P (6) 213; Clouded vitreous enamel, P (3) 98; Enameled ware, P (5) 176; Enamel frit, P (1) 10; Enamels, P (7) 246; Enamels and glazes, P (10) 325; Making white clouded iron enamel, P (3) 98; Manufacture of enamel, P (11) 349; Preparing enamel frit for producing white clouded iron enamel, P (3) 98; White clouded vitreous enamel, P (3) 98, P (8) 272.
**Kreilick, L. W., and Taylor, H. R.** Buffing section unit and assembly, P (4) 128.
**Kreis, E.** See Rickenmann, A.
**Kreisinger, H.** Significance to consumer of S in coal, A (4) 154.
**Krenkler, R. E.** Metal spraying in the oil industry, A (10) 334.
**Křepelka, J. H., and Kubis, J.** Trivalent and quadrivalent Mn, A (2) 87.
**Kriege, E.** See Wienerberger Ziegelfabriks- und Bauges.
**Krishnan, R. S.** Molecular clustering in binary liquid mixtures, A (3) 119; Reciprocity theorem in colloid optics, A (3) 120.
**Krishnaswami, K. R.** See Jayaraman, N.
**Kritzler, G.** Heat measurements in preparation of metallic polished sections, A (10) 321.
**Kröger, C.** Ternary and quaternary systems alkali oxide–CaO–$SiO_2$–$CO_2$—equilibria, reaction velocities, and their relation to glassmelting processes: I, A (5) 202, A (6) 234.
**Kröger, C., and Fingas, E.** System alkali oxide–CaO–$Al_2O_3$–$SiO_2$–$CO_2$: V, Stable equilibria in system $Na_2O$–$SiO_2$–$CO_2$ and pressures of $CO_2$ in the reaction between $K_2CO_3$ and $K_2SiO_3$, A (2) 87.
**Krogh, A. E.** Controlling a "controlled atmosphere," A (4) 149.
**Krohn, J. M., and Simpson, E. H.** Cylinder grinder, P (11) 346.
**Kroll, W.** Alkaline earth metals, P (5) 202.
**Kronenberg, M.** See Ernst, H.
**Kronquest, A. L.** Apparatus for applying enamel to can bodies, P (11) 349.
**Krotkiewski, Z.** Standardization and characteristics of blast-furnace refractories, A (10) 331.
**Krüger, K.** High-frequency technique, A (11) 365.
**Krüger, O.** Apparatus for continuous drawing of glass tubes of a larger diameter, P (10) 327.
**Krüger, P.** Glass wool—raw material to fabric, A (5) 179; Textile processes in production of glass fibers, A (5) 181.
**Kruh, O.** Production of Be, P (9) 315.
**Krupp, F., A.-G.** Sintering finely powdered materials, P (2) 77.
**Krupp, F., Grusonwerk, A.-G.** Plant for sintering cement, P (9) 299.
**Krutik, K.** See Zaprometov, B. G.
**Krymov, P. M.** Abrasive disks with vulcanite binder, P (7) 241; Ebonite abrasive disks, P (7) 241.
**Kubaschewski, O.** Diffusion of Ag in glass, A (3) 99.
**Kubis, J.** See Křepelka, J. H.
**Kubo, I.** See Sawai, I.
**Kück, H.** Significance of dedusting for reuse of foundry sand, A (8) 272.
**Kuechle, B. E.** Symposium on silicosis, B (9) 319.
**Kügler, K.** Effect of batch and moisture on melting and working of glass, A (2) 61.
**Kühl, C., Rudow, H., and Weyl, W.** Behavior of O-releasing compounds in glass in melting and fining process, A (6) 214.
**Kuhn, O.** See Dittler, E.
**Kühnert, H.** History of German and neighboring glass factories: I, A (6) 216; II, A (7) 248.
**Kukolev, G. V.** Foreign refractory materials for coke ovens, A (6) 221.
**Kulakov, N. N.** Viscosity and plasticity of disperse systems: XI, Comparison of 3 methods of determining plastic-viscous properties of peat masses, A (9) 311.
**Kumanin, K. G.** Resistance of grog bodies to attack of molten glass, A (5) 188.
**Kumazawa, J.** Application of bentonite, A (4) 155.
**Kunstman, E.** Glazing, A (6) 209.
**Kupferburger, W., and Lombaard, B. V.** Chromite deposits of Bushveld igneous complex (Transvaal), B (3) 117.
**Kupletskii, B. M., and Oknova, T. M.** Quantitative mineralogical composition of nepheline rocks, A (4) 158.
**Kupper, H. C.** Cup design, P (10) 323.
**Kupriyanova, L.** Silica brick containing chromite, A (1) 22.
**Kurbatov, S. M., and Solodovnikova, L. L.** Spinel, corundum, and titano-magnetite deposit in Khakassiya region, Siberia, A (6) 231.
**Kurchatov, I. V., Kostina, T. Z., and Rusinov, L. I.** Contact phenomena in SiC resistors, A (2) 80.
**Kurlyankin, F. A.** Effect of additions on speed of crystallization of quartz glass, A (6) 215; see Bezborodov, M. A.
**Kurnakov, N. S., Nikolaev, A. V., and Chelishcheva, A. G.** Heat of hydration and exothermal transformation for inyoite—conceptions of borate transformation, A (9) 316; Heating curves of borates, A (9) 316; Specific weight and hardness of natural borates and products resulting from their heating, A (9) 317.
**Kuroedov, V.** Hydraulic theory of furnaces, A (6) 228.
**Kurtz, R. W.** Psychrometric slide rule for solving air-flow problems, A (4) 152.
**Kusunose, S.** Abrasion of cast iron and effect of elements thereon, A (6) 207.
**Kuvshinskii, E.** See Kobeko, P.
**Kuzell, C. R.** See Winkler, F. W.
**Kuz'menko, I. I.** Attempts to manufacture refractory materials (semidry method) from grog fired at low temperature, A (1) 18.
**Kuz'mich, P. F.** Glass tank, P (5) 183.
**Kuzmick, J. N., and Hilton, L. S.** Abrasive article, P (9) 295.

**Laboda, M. M.** Production of low-silica alumina at Volkhov plant, A (2) 73.
**Labra, J.** Glass tile or panel, P (7) 250; Semiresilient ceramic tile flooring section, P (7) 257.
**Lacaille, A. D.** Neolithic pottery of Thames Valley, A (6) 210.
**Lacey, W. N.** See Sage, B. H.
**Ladd, L. L.** Tunnel kiln, P (11) 363.
**Lade, T. A.** See Bezborodov, M. A.
**Ladoo, R. B.** Nepheline syenite, A (4) 138.
**Ladouce, J.** Manufacture of cement in blast-kiln type furnace, A (2) 55.
**Laemmlein, G. G.** Model of polymerized molecule of silicic acid in melt, A (1) 43.
**LaFleur, E. D.** See Gould, G. S.
**Lafuma, H.** See Iltchenko, N.
**Lagrange, P.** Pyrex brand glass vessels in quantitative B determinations, A (6) 217.
**Laing, D. A. S.** Powdered material applying apparatus, P (2) 80.
**Lait, J. R.** See Partridge, J. H.
**Lake, W. H.** See Cheltnam, C. H. W.
**Lamar, J. E.** See Grim, R. E.
**Lamesch, A.** Developments in glassmaking, A (6) 214.
**Lampman, C. M.** Effect of bodies on wetting and flow characteristics of glazes, A (8) 282; Flow of glazes on horizontal and inclined surfaces, A (3) 107.
**Landel, E.** Materials for sleeve joints of pipes, A (5) 193.
**Landes, B. D.** Fusion welding wrought iron, A (3) 96.
**Landes, K. K.** Distribution of volcanic ash, A (10) 339; Origin of Quebec phlogopite-apatite deposits, A (10) 340.
**Landry, B. A.** See Nicholls, P.
**Land-Wheelwright Laboratories, Inc.** Applications for light-polarizing glass, A (1) 10.
**Lane, G. W.** Pottery making machine, P (9) 309.
**Lang, H.** Black spots in sheet-iron enamel, A (4) 134; Control of enameled sheet-iron and cast-iron ware, A (11) 348; Drying enamel ground coats, A (11) 348; Enamels resistant to acids, A (11) 348.
**Langavant, J. C. de.** Importance of colloidal phenomena in study of cements containing blast-furnace slag as base, A (2) 55.
**Lange, L. A., and Fellows, R. L.** Use of water elutriator in addition to screen tests in determining fineness distribution of milled enamel, A (10) 325.
**Langeland, E. E., and Pratt, R. W.** Improved trap for moisture determination by distillation, A (10) 334.
**Langenberg, R.** Raman effect in glasses, A (1) 13.
**L'Anglais, P.** Dish design, P (11) 347.
**Langmuir, I.** Fundamental research—human value, A (3) 122.
**Lanorville, G.** Manufacture of grinding wheels, A (8) 267.
**Lanza, A. J.** Physical aspects of silicosis problem, A (4) 165.
**Lapparent, J. de.** Attapulgite, A (8) 288; Emery of Samos, A (9) 295; Geological reasons for formation of three natural Al hydroxides, A (10) 339; Structural formulas and classification of clays, A (8) 290.
**Laptev, F. F., and Kir'yanova, A. G.** Determining swelling of clay, A (10) 344.
**Larchevêque, M.** Firing hard porcelain, etc., A (8) 282.
**Larsen, B. M.** See Shenk, W. E.
**Larsen, E. S., Irving, J., Gonyer, F. A., and Larsen, E. S., 3rd.** Petrologic results of study of minerals from Tertiary volcanic rocks of San Juan region, Colo., A (10) 340.
**Larsen, E. S., 3rd.** See Larsen, E. S.
**Larsson, T.** Abrasive wheel mount, P (7) 241; Track grinding brick and adapter, P (1) 4, P (10) 322.
**Laubenheimer, A.** Substitution of foreign paper kaolins, A (2) 83.
**Laubenheimer, A., and Lehmann, H.** White-firing Schletta pitchstone kaolins and clays, A (11) 364.
**Lauck, A. G., and Johnson, J. M.** Apparatus for surface treating glass containers, P (5) 182.
**Laure, Y., and Gaudry, H.** Experimental determination of flame temperature—methods and results, A (6) 227.
**Laurence, F. S.** Ceramics in architecture, A (3) 107.
**Laurence, R. A.** See Rankin, H. S.
**Laurent, A.** Equipment and technique for making mirrors, A (1) 12.
**Lauser, E.** Ceramic tile in refrigerated enclosures, A (4) 146.
**Lavino, E. J., & Co.** Magnesia refractories, P (9) 308; Petrography and heat treatment of chromite refractories, B (1) 24; Refractories from metallurgical viewpoint, B (1) 24.
**Lawrence, R. E., and Westbrook, L. R.** Indium—occurrence, recovery, and uses, A (10) 339.
**Lawrenz, M.** See McCarty, C. N.
**Lax, E., and Schön, M.** Production of high temperatures, A (5) 187.
**Lazier, W. A., and Vaughen, J. V.** Cr sulfomolybdate catalyst, P (3) 121.
**Lea, F. M.** Problems in study of hydraulic cements, A (9) 298.
**Leach, W. R., Jr.** Bottle design, P (1) 5.
**Leather, R. S.** Polishing and buffing special metals, A (2) 51.
**Lebedev, A. A.** X-ray analysis of structure of glasses, A (10) 327.
**Lebedev, V. A.** Small Cryptol laboratory furnace, A (1) 31.
**Lebeter, F.** Magnesite in India, A (4) 157.
**Lederle, E., and Brill, R.** Synthetic spinels, P (9) 317.
**Leduc, R.** Efflorescences in ceramic materials, A (7) 252; Insulation of furnaces lined with silica brick, A (8) 280; Magnesia brick, A (5) 187; Metallized enamels, A (3) 93; Pyrophyllite, A (8) 289; Refractory clays, A (4) 158, A (7) 262.
**Lee, G. L.** Glass-cutting apparatus, P (1) 15, P (8) 277.
**Lee, H. C.** Basic refractory, P (6) 223; Ca orthosilicate refractory, P (3) 106; Lime-

resistant refractory, P (5) 189; see McCaughey, W. J.
**Lee, H. S.** Process and apparatus for forming cement clinker, P (1) 6.
**Lee, H. W.** Lens for photography, P (7) 250.
**Lee, J. A.** Manufacture of glass blocks, A (5) 307.
**Lee, L.** See Chesters, J. H.; Jay, A. H.
**Leech, J. G. C.** See Brammall, A.
**Leeds, M. E.** Engineers and economics, A (4) 165.
**Leeuw, P. de.** Alkali silicate cement, P (6) 208; Manufacture of ceramic articles, P (3) 92; see Whitacre, M. L.
**LeFevre, M. L.** See Hodge, H. C.
**Leffingwell, G., and Lesser, M. A.** Applications of glycerine, A (9) 301.
**Lefranc, J. G. A.** Compounding ceramic products, P (2) 77.
**Legraye.** Natural gas in Europe, A (5) 195.
**Lehmann, H.** See Laubenheimer, A.
**Lehmann, H., and Schulze, M.-T.** Lead glazes and poisoning, A (11) 359.
**Lehnert, R.** See Sustmann, H.
**Lehnigk, K.** See Dudek, W.
**Lehoczky, P. N.** Alignment charts—construction and use, B (1) 45.
**Leigh, C. W.** Plate design, P (7) 244, P (8) 271.
**Leipziger Tangier-Werk A.-G.** Spraying booth for applying decoration, P (7) 251.
**Leitgebel, W., and Bockemühl, K.** Effect of silicic acid on magnetic properties of dissociated mixtures with FeO, A (2) 85.
**Leitner, F.** Process for producing core electrodes, P (10) 337.
**Lemmerman, R. G.** Refractory, P (2) 75.
**Lengyel, B. v., and Sammt, A.** Electromotive forces between glass and salts in the melt, A (11) 350.
**Lentzen, K.** Refractory products for metal melting furnaces, A (3) 105.
**Leont'eva, A. A.** Determining limit of softening interval of binary system $Na_2B_4O_7$–$B_2O_3$, A (4) 160.
**Lépingle, M.** Application of physicochemical principles to manufacture and testing of refractory products, A (10) 329; Hydraulic bond in refractory masonry—*ciment fondu*, A (7) 253; Manufacture and properties of refractory products, A (5) 185, A (6) 222; Mullite refractory products, A (8) 281; Use of hydraulic cements in refractory concrete masonry: I–II, A (11) 357.
**Lerch, W.** Approximate glass content of commercial Portland cement clinker, A (4) 131; Effect of glass content on heat of hydration of Portland cement, A (11) 347.
**Lesnik, G. J.** See Bent, H. E.
**Lesser, M. A.** See Leffingwell, G.
**Letort, Y.** Measuring high temperatures in apparatus and industrial laboratories, A (4) 151; Refractory furnace linings for melting nonferrous metals, A (8) 281.
**Letterman, W. E.** Spark plug, P (1) 27.
**Leudeke, V. D.** See Hixson, A. W.
**Leun, A. V.** Insulating refractory brick—properties and application, A (1) 19; Refractories application—trend in steel plant, A (4) 144.
**Levenshtein, S. A.** High alumina bodies—andalusite corundum refractories, A (5) 186; see Klyucharov, Ya. V.
**Lever, P.** See Jordan, A. T.
**Leverenz, H. W.** Luminescent material, P (5) 203.
**Levi, L. I.** See Kogan, N. A.
**Levi, O. S.** See Calkins, L. E.
**Lewis, H.** Porcelain and earthenware at Leipzig Spring Fair, 1936, A (4) 148.
**Lewis, H. F., and Crawford, W. R.** Bentonite for increasing density and decreasing weight of clay products, A (3) 115.
**Lewis, W. K.** See Walker, W. H.
**Lewis, W. K., Squires, L., and Thompson, W. I.** Colloidal properties of clay suspensions, A (3) 115; Structure of clay gels, A (3) 116.
**L'Hommedieu, A. W.** Buffing or polishing wheel, P (10) 322.
**Lhote, R.** Securit glass, A (1) 14.
**Libbey-Owens-Ford Glass Co.** Apparatus for tempering glass, P (1) 15.
**Liberty Shoes, Ltd., and Banner, W.** Abrading and analogous rotary tool machines, P (6) 208.
**Libovitz, H., Mueller, W., and Pfeiffer, W.** Polishing compound, P (11) 346–47.
**Liebermann, E.** See Singer, M.
**Liebscher, J.** Addition of pigments to enamels (glazes), A (11) 347; Colors on glazes for decorative ceramics, A (7) 242; Experiences in manufacture of faience ware and garden ceramics, A (7) 255.
**Liegeois, R.** Direct determination of Na ion, A (3) 118.
**Lietz, J.** Low-density zircons, A (8) 291.
**Lightfoot, J. H.** See Jessen, F. W.
**Lillie, H. R.** See Littleton, J. T.
**Lillie, H. R., and Shaver, W. W.** Glass tempering method, P (6) 218; Glass vessel, P (6) 218.
**Lincoln, R.** See Wooddell, C. E.
**Lind, S. C.** See Cohn, B. E.
**Lindars, H.** See Lloyd, F.
**Lindberg, R.** See Wallquist, G.
**Lindgren, R. A.** Refractories for iron blast furnaces, A (1) 21.
**Lindley, W. S.** See Alcock, V. G. H.
**Lindman, E. I.** Sintering mineral substances and porous product thereof, P (7) 259.
**Lindner, H.** Machine for grinding screw threads, P (7) 241; Profiling and dressing grinding wheels for grinding screw threads, P (2) 52; Profiling and dressing of profile grinding disks, P (10) 322.
**Lindner, H.-J.** Firing costs and utilization of kiln space for economical sagger size, A (1) 33.
**Lindner, O.** Grinding apparatus with eccentrically driven grindstone, P (8) 268.
**Linsbauer.** Computations in enamel industry, A (2) 57.
**Lintner, E. J.** Mining and grinding methods and costs at Malvern Clay Co. mine, Malvern, Ohio, B (2) 90.
**Lintz, E. H.** Use of talc and pyrophyllite in semivitreous dinnerware bodies, A (7) 257.
**Lintzov, M. F.** Device for determining volume of brick, A (9) 310.
**Lippert, T. W.** Heat treating refractories, A (6) 222.
**Lippitt, S. W.** Buffing wheel, P (2) 52; Knitted buffing wheel, P (5) 170; Polishing wheel, P (5) 171.
**Lippold, C. J.** Finishing and polishing machine, P (8) 268; Sanding and polishing machine, P (5) 171.
**Lissman, M. A.** Jet pulverizing, A (10) 334.
**Litchiser, R. R.** Brick road experiments in Ohio, A (4) 141, A (9) 306; Rattler test from standpoint of broken brick, A (6) 220.
**Littlefield, J. B., Brown, C. E., and Schrenk, H. H.** Technique for routine use of konimeter, B (7) 258.
**Littlefield, J. B., Feicht, F. L., and Schrenk, H. H.** Bureau of Mines midget impinger for dust sampling, B (5) 194; Efficiency of impingers for collecting Pb dust and fumes, B (11) 361.
**Littlefield, J. B., and Schrenk, H. H.** Dust sampling with Bureau of Mines midget impinger using hand-operated pump, B (7) 258; Relation of dust concentration to depth of hole during wet drilling, B (7) 266.
**Littleton, J. T.** Insulator, P (6) 218, P (8) 278.
**Littleton, J. T., Lillie, H. R., and Shaver, W. W.** Tempered glass article, P (6) 219.
**Litvakovskii, A. A., and Osipov, M. V.** Soviet mullite, A (11) 357.
**Liu, F. Y.** Production of $K_2SO_4$ and ammonium from alunite, A (4) 157.
**Livermore, J. N.** Unusual air-conditioning problems in glass block building, A (8) 276.
**Livezey, B. M.** Cooling and reheating by-product coke ovens, A (10) 330.
**Livingston, R.** See Nurnberger, C. E.
**Livsey, D. M.** Grinding and polishing helical grooves, P (8) 268.
**Lloyd, F., and Lindars, H.** Rotary furnace, kiln, or drier, P (10) 336.
**Lloyd, P. G.** Bottle design, P (5) 172, P (6) 211; Jar design, P (3) 94.
**Lloyd, S. J.** Geology of nonmetallics of the southeast, A (10) 339.
**Lloyd, W. M.** Fuel-economizer brick for open fireplace grates, P (1) 25.
**Loch, L.** Development of magnesite works in Satka during First Five-Year Plan, A (5) 186.
**Lochtkemper.** Practical import for silicosis problems of Third Ordinance, increasing accident insurance in occupational diseases, A (11) 367.
**Lockemann, G.** Kjeldahl flasks, etc., from As-free glass, A (2) 64.
**Lockett, A. M., and Holloway, H. H.** Method and apparatus for separating gravel, P (4) 153.
**Lockett, R.** See Webb, H. W.
**Loesch, E. J.** Design for combined bowl and base, P (10) 323.
**Loewy, J. E.** Abrasive assembly, P (8) 268.
**Löffler, H.** See Weidert, F.
**Löffler, J.** Se pink as glass color and its modification by rare earths, A (5) 172.
**Lofquist, K. H. S.** $Al_2O_3$ separation, P (1) 24; Extracting $Al_2O_3$ from raw material, P (9) 308; Photographic and spectrographic study of colors of slag constituents, A (6) 233.
**Loginov, S. P.** Formation of cracks in dry-pressed brick, A (2) 68.
**Lohmann, W.** Progress in welding (1937), A (10) 325.
**Lohse, F. W.** Bottle design, P (2) 54, P (10) 323.
**Lombaard, B. V.** See Kupferburger, W.
**Lombardo, D.** Determination of As in ordinary and special steels and cast irons by $SnCl_2$ method, A (4) 160.
**London Brick Co., Ltd., Ractliffe, G. H. C., and Rowe, C. W. D.** Sand facing of brick, building blocks, etc., P (10) 329.
**Lonergan, G. P.** Hot blast temperature controlled automatically, A (1) 29.
**Long, B.** Adherence of Al to glass—technical applications, A (9) 301; Deformation at high temperature of silicoaluminous refractory materials, A (4) 143; Glazed roofing, P (9) 305; Hollow glass brick—properties and uses, A (7) 248, A (10) 326; Manufacture of multicellular glass, P (9) 306; Properties of multicellular glasses, A (1) 13; Tempered glass article, P (1) 17; Thermal conductivity of ceramic materials, A (3) 106; Use of thin deposits of Al on glass as heating elements, A (1) 15.
**Long, H. H.** Artificial lighting of vitreous enamel plant, A (11) 367.
**Longchambon, H.** Characteristics of sepiolite from Ampanandrava—formula, A (9) 313; Dehydration of minerals, A (9) 310; Genetics of gneisses and sillimanitic granulites in French Central Massive, A (3) 115; Refractoriness of silicoaluminous products, A (7) 254.
**Longenecker, L. S.** Furnace arch and refractory block, P (10) 332.
**Longmore, E. L., and Hollinger Mill Staff.** Comparison of low *vs.* high discharge for ball mills, A (1) 27.
**Lopez, V. M.** See Dorris, J. E.
**Lord, C. S.** See Dorris, J. E.
**Lorenson, L.** Pictures of the chase on china, A (7) 243.
**Lorenzen, A. I.** Ashtray design, P (1) 5; Bottle design, P (2) 54, P (8) 271.
**Lorenzi, O. de.** Factors influencing design of pulverized coal-fired steam-generating units, A (6) 236.
**Losee, W. H.** Canadian ceramic industry (statistical review), A (1) 46.
**Losev, L. M.** See Bugarev, L. A.
**Lössnitz, R.** Clay, P (5) 191.
**Lothian, G. F.** See Twyman, F.
**Lott, F.** Glass for false teeth, A (1) 12.
**Lotz, W.** Form and decorativeness of glass—hand and industrial production, A (5) 171.
**Loveland, R. A.** See Tyler, W. E.
**Lovell, A. C. B.** Electrical conductivity of thin films of alkali metals spontaneously deposited on glass surfaces, A (8) 273; see Appleyard, E. T. S.
**Lowe, R. E.** See Morgan, J. D.
**Lowry, C. D.** Design for corner molding strip unit, P (10) 323.
**Lucas, R.** Longitudinal waves of high frequencies in viscous liquids, A (8) 291.
**Ludin, W.** See Graemiger, B.
**Ludowici, W.** Roofing tile, P (4) 146.
**Ludwig, J. E.** Spray booth, P (8) 286.
**Lumière Clarté Soc. Anon.** Device for grinding and polishing mirror glass, P (10) 322.
**Lummus Co.** See Babcock & Wilcox, Ltd.
**Lund, J., Ltd., and Scaife, J. D.** Electrically operated stop mechanism for automatically arresting operations of grinding machine tools, etc., P (7) 241; Stop mechanism for cylindrical grinding machines, P (1) 4.
**Lundell, G. E. F.** See Hoffman, J. I.
**Lutherer, O.** Gas burner, P (7) 261.
**Luttermoller, H.** Arrangement for converting a bathtub into vapor bath, P (11) 349.
**Lynch Corp.** Glassblowing machine, P (2) 67.
**Lyon, K. C.** See Parmelee, C. W.
**Lyon, T. L., and Buckman, H. O.** Nature and properties of soils—college text of edaphology, B (1) 40.

**Lyons, E. J.** See MacLean, G.
**Lysenko, A. N.** Influence of molten Al on firebrick lining in electric furnace, A (2) 71.
**Lytle, W. O.** Glass brick wall, P (5) 182.
**Lyul'ev, B. V.** Easily fusible glazes without boric acid and Pb, A (2) 53; see Zhukovskii, G. Yu.
**Lyutin, L. V., Kiryushkin, V. A., and Kormer, I. M.** Automatic control in examination of mineral suspensions, A (2) 77.

**M.** Prevention of cracking of stoneware and unglazed ware, A (5) 191.
**Maass, O., and Richardson, R. E.** Apparatus for determining opacity of paper, etc., P (10) 336.
**Macauley, J. M.** Liquid films between seized surfaces, A (1) 47.
**Macbeth, R. G.** See Barclay, A. E.
**MacCarthy, F. B.** Making alumina and K sulfate, P (8) 281.
**MacDonald, J. A.** Producer-gas plants and controlling composition of producer gas, P (9) 312.
**MacDonald, S. B.** Refractory concrete, A (9) 308.
**Macey, H. H.** Effect of temperature and humidity on rate of drying of clay shapes, A (6) 225, A (8) 284; see Clews, F. H.
**Macey, H. H., and Hind, S. R.** Experimental drier for clayware, A (3) 110.
**Macey, H. H., *et al.*** Discussion of "Driers for roofing tile," A (7) 257.
**Machatschki, F.** Crystal structure of $AlAsO_4$—isomorphism of crystal types of Si and pentavalent As, A (2) 82; Structural relationships of kaolinites and anauxites, A (5) 198.
**Macht, M. L.** Manufacture of laminated glass, P (6) 219.
**Machu, W.** Theory of inhibitor action and method of inhibitor evaluation, A (4) 136.
**MacIntire, W. H.** Making dicalcium phosphate, P (6) 235; Process for obtaining MgO from dolomitic rock, P (8) 292.
**MacIntyre, H. F.** See Brooks, H. L.
**Mackay, D.** Finds at Chanhu-Daro, A (1) 4.
**Mackay, R.** Device for measuring color and light densities, P (9) 298.
**Mackelfresh, W. E., Jr.** Bookend design, P (1) 5; Glass design, P (3) 94; Jar design, P (2) 54.
**MacKenzie, J. T.** See Donoho, C. K.
**MacLaurin, J.** Decalcomania paper, P (8) 270, P (11) 347.
**MacLean, G., and Lyons, E. J.** Mixers in process industries, A (10) 334.
**MacLeod, J. N.** Roofing tile, P (1) 25.
**MacPherson, D. R., and Forbrich, L. R.** Determination of uncombined lime in Portland cement—ethylene glycol method, A (5) 200.
**MacQuigg, C. E.** Refractory composition, P (9) 309.
**Maczejka, R.** Apparatus for coating electric-lamp bulbs on both sides with paraffin wax prior to opacifying, P (5) 182.
**Maddock, W. E.** Means for supporting pottery during firing, P (4) 154.
**Maddox, W. J.** Abrading roll, P (10) 321.
**Madduz, O. L.** Gas in ceramic industry, A (1) 33.
**Madzhagaladze, K. L.** Potentiometric titration of Al solutions containing nitrates with Sb electrode, A (10) 342.
**Maegdefrau, E., and Hofmann, U.** Mica-like minerals as clay substances, A (8) 289.
**Maffei, A.** Adsorption of lime on silica gels, A (3) 118.
**Magarshak, G. K.** Composition of charge in smelting Ca aluminate slags, A (2) 55.
**Maglott, G. F.** Grinding machine, P (11) 346.
**Magnesit-Industrie A.-G.** Refractory brick, P (5) 190.
**Magnesital, G.m.b.H.** Manufacture of fireproof brick or linings, P (9) 308–309; Producing ceramic articles which resist spalling, P (1) 24; Refractory products, P (8) 282.
**Magraw, R. M.** New Mexico sylvinite—occurrence and mining, A (10) 340.
**Mahood, M.** Art of medieval potter, A (2) 53.
**Majumdar, N. G.** Nal pottery, A (5) 171.
**Makarin, S. N.** Automatic temperature regulator for brick driers, A (1) 27; Device for determining viscosity and moisture content of green ware, A (9) 310; Temperature control in green brick driers, A (4) 152.
**Makhl, R. T.** Effect of highly refractory additions to sagger mixes, A (7) 253; Manufacturing grog products with constant gas permeability, A (1) 20; Quantitative relationship of clay and grog in sagger mixes, A (5) 187; Thermal resistance of sagger mixes, A (3) 106.
**Makram, L. T.** Cupola fire brick, A (10) 330.
**Malhotra, R. L.** See Yajnik, N. A.
**Malinovszky, A.** Ceramic composition, P (4) 167; Wall structure, P (8) 279.
**Malkin, E. W.** See Manor Engineering Co., Ltd.
**Mall, A. W.** Abrasive wheel, P (7) 241; Angle grinding spindle, P (7) 241; Portable grinding machine, P (10) 322; Rail grinder, P (3) 93; Terrazzo grinding angle spindle, P (3) 93; Terrazzo grinding apparatus, P (3) 93.
**Mallowan, M. E. L.** Syrian city of Tilbarsib, A (4) 130.
**Malloy, F. J.** See Donovan, J. F.
**Malmstrom, H. F.** Testing parallelism of glass plates, A (3) 101.
**Malocsay, F. X.** Machine for applying decalcomanias, P (7) 244.
**Malquori, G.** Technical properties of quick and hydrated lime, A (1) 6.
**Malquori, G., and Penta, F.** Volcanic rocks resistant to corrosion of liquid acids, A (1) 39.
**Malquori, G., Sollazzo, V., and Sasso, F.** High-grade refractory aluminous materials, A (8) 280.
**Mamurovskii, A. A., and Elinzon, M. P.** Artificial breccia-like marble, "akarkhite," A (6) 211.
**Mamykin, P. S.** Chromite and chrome-magnesite refractory materials, A (2) 70.
**Mamykin, P. S., and Zlatkin, S. G.** Porous magnesite products, A (6) 222.
**Manegold, E.** Capillary systems: XIX-a, Systematics of porous systems; XIX-b, Calculated and experimentally determined pore volume in compact and coherent materials; XIX-d, Permeability to liquids and gases of canal, skeleton, and network systems; XIX-e, A (9) 315.
**Manegold, E., and Solf, K.** Capillary systems: XIX-c, Effective pore volume in branching canal systems, A (9) 315.
**Manegold, E., and Stüber, C.** Electric transport through phase boundaries: System II [glass–molten metal (Hg)]; System III [glass–molten salt ($AgNO_3$)], A (2) 62.
**Manfred, O.** Basic technical progress in porcelain industry—vacuum press, A (2) 76; De-airing and laminations, A (3) 110; De-airing pug mill, A (11) 359.
**Mangler, W.** Effect of direction of drawing on tensile strength of plate glass, A (2) 61.
**Mann, R. F.** Choice of gas burner system, A (6) 227; Industrial gas-burner systems, A (7) 259; Industrial gas-heating calculations, A (8) 287.
**Manning, P. D. V.** Refining diatomite, A (8) 289.
**Manor Engineering Co., Ltd., and Malkin, E. W.** Filter presses, P (10) 336.
**Manson, M. E.** Grinding dry-process enamel—effect on working properties, A (10) 324.
**Manuilova, N. S.** Microstructure and technological properties of magnesite brick from Satkinskii and Khalilovskii deposits, A (2) 72.
**Marants, A. G.** Refractories with chromite base and increased resistance to deformation under load at high temperature, A (1) 21.
**Marbaker, E. E.** See Phelps, S. M.
**Marden, A. L.** Flow of glass in tanks, A (8) 273.
**Markert, F. S.** Batch-type enameling furnaces, A (1) 7.
**Marko, A.** See Kaunitz, H.
**Markova, G. A.** Determination of F in presence of amorphous silica, A (2) 84.
**Markovskii, A.** Bauxite locality in Turkestan mountains, A (3) 115.
**Marr, P. G.** Method and apparatus for spraying powder, P (9) 312.
**Marsan, E.** Sèvres porcelain, A (7) 243.
**Marschner, W.** Little known source of soluble salts, A (2) 81; Prevention of efflorescence in manufacture of brick, A (11) 353.
**Marsh, G. E.** Measuring components of thin sections with planimeter, A (10) 342.
**Marsh, K., and Dike, P. H.** Pyrometry—thermoelectric, optical, and radiation, A (1) 30.
**Marshall, A.** See Kingscliffe Insulating Products, Ltd.
**Marshall, C. E.** Colloidal properties of clays—crystal structure, A (10) 342.
**Marston, A.** Mortality curve study of actual service lives of brick-on-concrete pavements, Des Moines, Iowa (1909–1928), A (9) 307.
**Marston Valley Brick Co., Ltd.** See Shorrock, R. T. L.; Whitehouse, D.
**Marth, P.** Making shaped bodies from hard substances, P (7) 241.
**Martin, A. E.** Determining Al by titration with alkali, A (9) 315.
**Martin, H. C., and Upper, F. A.** Abrasive article, P (6) 208.
**Martin, J.** Device for separating dust from flowing gases, P (8) 286.
**Martin, J. H.** Manufacture of lenses, P (1) 16.
**Martin, R. H.** Shellac-bonded abrasive article, P (5) 171.
**Martin, W. G.** Unusual application of automatic spraying of vitreous enamel slip, A (8) 272.
**Mary, C.** Pneumatic tools for grinding, polishing, etc., P (2) 52.
**Maschinenfabrik Paul Schuster.** Manufacture of pottery, A (1) 26.
**Masheter, P. E.** Base-course design, A (6) 219.
**Mashovetz, V. P.** Molecular state of oxides dissolved in cryolite, A (2) 85.
**Masukowitz, H.** Application of electric heating in ceramic industry, A (3) 112; Electric heat in industry, A (5) 195; Sheet enameling furnace, a high-capacity electric furnace, A (11) 362.
**Matějka, J.** Determination of efflorescence on ceramic products, A (6) 219; Drying at low pressures, A (8) 284; Drying plant classification, A (7) 257; Fired roofing: Vol. 3, B (7) 256; Properties of brick products, A (7) 252.
**Mather, D. T., and Thorvaldson, T.** Action of saturated steam on dicalcium ferrite and tetracalcium aluminoferrite, A (3) 94.
**Mathes, K. N.** Fiber glass as insulator for electric apparatus, A (8) 273.
**Mathews, F. J.** Storage of coal supplies, A (6) 228.
**Mathieu, F.** See Chrompet.
**Matossi, F.** Atomic constitution of glass, A (10) 325; Infra-red spectrum and structure of silicates and glasses, A (4) 138.
**Matsuo, M.** See Kamita, K.
**Matthew, T. U.** Mechanism of wear in metals, A (9) 310.
**Matthews, G. C.** Tunnel kilns in heavy clay industry, A (10) 337.
**Matthews, J. W.** Character of dusts liable to produce silicosis, A (7) 265; see Briscoe, H. V. A.
**Matthews, J. W., Holt, P. F., Sanderson, P. M., and Briscoe, H. V. A.** Porous solid filters for sampling industrial dusts, A (2) 89.
**Mattocks, E. O.** Fundamentals of gas combustion, A (1) 33.
**Mattson, S., and Hou, K.-C.** Laws of soil colloidal behavior: XX, Neutral salt effect and amphoteric points of soils, A (1) 43.
**Mattson, V. L.** Disseminated kyanite, A (1) 36.
**Mauch, C. A.** Modern vertical core ovens, A (1) 9.
**Mauder, B.** Decorating by lines, A (2) 53; Glassblower's work (free-hand, blown), A (10) 326.
**Maufras, S.** Glass age in moving-picture industries, A (8) 273.
**Maurach, H.** Glass for new applications, A (5) 178.
**Mauri, A.** BeO as a component of glass, A (2) 60.
**Mauve, L.** See Rieke, R.
**Mavor and Coulson, Ltd.** Mechanical handling at clay pits, A (5) 193.
**Mawhinney, M. H.** Furnace conveyers, A (7) 245; Heating furnace economy and operations, A (1) 8.
**Maxson, W. L.** Grinding fundamentals, A (10) 334; see Bond, F. C.
**Mayer, K.** Defects forming in glass when worked over a blast lamp, A (8) 273.
**Mayer & Schmidt Schleifmaschinen und Schmirgelwerke, A. G., and Buttinger, H.** Machine for grinding circular and non-circular work pieces, P (8) 268.

**Mazel, V. A.** Combined alkaline method for obtaining alumina, A (2) 70.
**Mazel, V. A., and Astauovitzkaya, S. N.** Reactions between $Na_2CO_3$ and $Fe_2O_3$ and $Al_2O_3$, A (2) 86.
**McAdam, R.** Construction of alignment charts, A (11) 359.
**McAdams, W. H.** See Drew, T. B.; Walker, W. H.
**McArthur, C. K.** Trends in classification, A (8) 285.
**McArthur, T. J.** See Kent, B. B.
**McBerty, F. H.** Ball mill attack of titaniferous ores, P (1) 45; Pug mill attack of titaniferous ores, P (1) 45; Utilization of waste products in manufacture of Ti compounds from Ti ores, P (1) 45.
**McBurney, J. E.** Glassmelting furnace, P (7) 250.
**McBurney, J. W., and Eberle, A. R.** Further study of water penetrability of clay and shale building brick, A (7) 252; Strength, water absorption, and resistance to freezing and thawing of sand-lime brick, A (4) 142.
**McCall, M. M.** Canadian National grinds driving axle journals, A (1) 1.
**McCallum, J.** Ba and Ca sulfate production, P (9) 317.
**McCargo, W. T.** Application of diamond wheel to grinding of cemented carbides, A (7) 239.
**McCarty, C. N., Scribner, L. R., and Lawrenz, M., with Hopkins, B. S.** Observations on rare earths—quantitative estimation by their arc spectra, A (10) 342.
**McCaughey, W. J., and Lee, H. C.** Hearth refractories for steelmaking, A (1) 19.
**McCauley, G. V.** Ceramic mold, P (8) 277.
**McClenahan, F. M.** Insulation material, A (7) 248.
**McCollum, E. V.** Method of making geological explorations, P (8) 290.
**McCollum, E. V., and Athy, L. F.** Geophysical method of determining geological structures, P (8) 290.
**McConnell, D.** Structural investigation of isomorphism of apatite group, A (5) 198; Substitution of $SiO_4^{=}$ and $SO_4^{=}$ groups for $PO_4^{=}$ groups in apatite structure—ellestadite, the end member, A (4) 158.
**McCrosky, C. R.** See Coleman, W. C.
**McDaniel, G. R.** Tests disprove theory that glassware bloom is caused by dust from fiber containers, A (3) 101.
**McDougal, T. G.** Ceramic product manufacture, P (5) 191; Tunnel kiln, P (1) 35; see Rabezzana, H.
**McDougal, T. G., Fessler, A. H., and Barlett, H. B.** Spark plug insulator, P (1) 27.
**McDougal, T. G., Fessler, A. H., and Schwartzwalder, K.** Spark plug insulator, P (1) 27, P (7) 257, P (9) 309.
**McDowell, J. S.** Refractories in steel plant, A (4) 144; see Rochow, W. F.
**McElroy, O.** See Hicks, V.
**McFarland, J. L.** Enameling furnace, P (2) 59.
**McGill, W. H.** Tool-sharpening apparatus, P (11) 347.
**McGohan, G. W.** Preparing metal for enameling, P (2) 59.
**McGrath, R.** Glass in modern life: III, Building, A (9) 303.
**McGrath, R., and Frost, A. C.** Glass in architecture and decoration, B (9) 305.
**McGrath, W. A.** See Baker, C. P.
**McGrue, W. M.** Refractory concretes for coke ovens and furnaces, A (4) 144.
**McIntosh, A. B.** See Hay, R.
**McIntosh, A. B., Rait, J. R., and Hay, R.** Binary system $FeO$–$Al_2O_3$, A (1) 41.
**McIntosh, A. H.** See Pfaff, H. E.
**McIntyre, G. H.** See Hansen, J. E.
**McIntyre, G. H., and Bevis, R. E.** Frit solubility: II, Controlled variables of frit composition—relation to enamel consistency, A (6) 213.
**McIntyre, G. H., and Stuart, R. W.** Apparatus for smelting, P (1) 10.
**McIntyre, T. J.** Grinding wheel, P (10) 322.
**McKay, G. R.** Glass etching, P (11) 352.
**McKellar, E.** Bentonite and sub-bentonite activation, P (10) 341.
**McKelvey, J. H., and Rogers, J. W.** Glass-tank wall, P (10) 328.
**McKelvy, E. A.** Checkerwork, P (4) 146.
**McKendrick, A.** Casting pit refractories, A (4) 142.
**McKinley, G.** Spark plug, P (6) 224.
**McKinley, J. M., and Carter, W. K.** Ceramic patching cement, P (2) 75; Ferruginous siliceous refractories, P (5) 189.
**McKinley, J. M., and Robinson, R. R.** Investigation of power reduction and moisture control in waste-heat drying, A (4) 150.
**McKinney, R. M.** See Booge, J. E.
**McKnight, D., Jr.** See Schoch, E. P.
**McLaughlin, G. E., and Broughton, W. E.** Buffing machine, P (1) 3.
**McMahon, J. F.** Ability of underslips and glazes to cover surface imperfections, A (3) 107; Charles Fergus Binns, A (6) 236; Development of laboratory tests for high temperature cements, A (1) 19.
**McMillen, E. L.** Versatile nomograph for chemical engineering calculations, A (5) 202.
**McMillen, E. L., and Webber, H. A.** Filtration—accuracy of prediction of plant operation from test data, A (10) 334.
**McMurdie, H. F.** See Insley, H.
**McMurdo, A.** See Hyslop, J. F.
**McMurray, L. L.** See Rankin, H. S.
**McNab, J.** See Hyslop, J. F.
**McNair, H.** Mold facings for cast iron—effect upon vitreous enamel, A (11) 348.
**McNamara, E. P.** See Taylor, N. W.
**McNamara, W. L.** Glass feeding apparatus, P (1) 15; Method and apparatus for feeding glass, P (10) 328.
**McNeil, D. W.** Flush bowl, P (7) 257.
**McNutt, J. F.** Method of applying a decalcomania, P (6) 211.
**McPeak, D. G.** Razor stropping mechanism, P (11) 347.
**McQuiston, F. B.** Decorating apparatus, P (4) 153.
**McVay, T. N.** Clays of Alabama, A (9) 313.
**McVay, W. S.** Furnace and method of firing, P (5) 194.
**Meder, A.** Melting off caps from hollow glassware, P (8) 278.
**Mehlig, J. P.** Colorimetric determination of Fe with salicylic acid, A (10) 342; Determination of Cr in chromite, A (4) 160; Spectrophotometric method for determining Fe in ores, A (8) 292.
**Mehmel, M.** Disintegration and transformation of biotite, A (1) 36.
**Meier, A. E.** See Tomlinson, W. H.
**Meier, F. W.** See Bucherer, H. T.
**Meier, J. H.** Glass milk bottle design, P (7) 244.
**Meier, M.** See Krahenbuhl, F.
**Meiklejohn, A.** See Sutherland, C. L.
**Meisse, L. A.** Improvement in adaptability of Tuckerman strain gage, A (4) 150.
**Meissner, J., Glasraffinerie, G.m.b.H.** Manufacture of glass for illuminating purposes, P (8) 278.
**Meixner, H.** Mineral lazulite—types of deposit, A (1) 38; Two new occurrences of pyrophyllite in Alps, A (1) 39.
**Melamed, R. I.** See Strokov, F. N.
**Melchiorre, P.** Apparatus for tempering sheets of glass, P (8) 276; Electric furnace for tempering sheets of glass, P (8) 277.
**Meldau, R.** Rules for efficiency tests on dedusters, A (1) 30.
**Melenevskii, L. A.** See Slobodyanik, I. Ya.
**Melichar, M.** See Štěrba-Böhm, J. S.
**Meller, H. B., and Rupert, F. F.** Physics of air hygiene, A (2) 89.
**Mellon, M. G.** See Swank, H. A.
**Mellor, J. W.** Chemical constitution of clay molecule—later theories, A (8) 288; Comprehensive treatise on inorganic and theoretical chemistry: Vol. 16, Pt and general index, B (4) 164; Crazing of glazed wall tile in service, A (3) 108; Molecular formulas of clays and glazes, A (3) 120; Pan grinding, A (8) 285; "Sherlock Holmes"—reminiscences of Bernard Moore, A (3) 123.
**Melton, R. L.** Testing and classifying bonded granular bodies, P (4) 128; see Benner, R. C.
**Melzer, H.** Opacifiers in wet and powder enamels, A (2) 57; White ground coat, A (1) 10.
**Mende, J.** Electric temperature measurements, A (6) 225.
**Mendelson, M.** See Sinay, B.
**Mendenhall, H. E.** Composite refractory body, P (9) 308.
**Mengelkoch, K.** Temperature dependence of shearing strength of glass rods, A (2) 66.
**Mengeringhausen, M.** Glass as substitute for construction materials from standpoint of user, A (5) 179.
**Mengle, G. A.** Ashtray design, P (9) 298.
**Menzel, H.** Borax as accessory material in ceramics and kernite as raw material for producing borax and boric acid, A (1) 35; Boric acid and alkaline boric acid salts: VII, Constitution of perborates and polyborates, A (2) 84.
**Mercner, R. O.** Mechanism of isograph, A (4) 151.
**Meredith, T. H.** See Roberts, J. H.
**Meredith, W. W.** Flat grinding mechanism for carding machines, P (6) 208.
**Mergler, F.** Defects appearing during working of glass, A (1) 11.
**Mérigoux, R.** Contamination of glass by grease, A (4) 137.
**Merriam, E. S.** Making preformed abrasive articles, P (7) 241.
**Merrill, D. G.** Drift-controlling apparatus for glassware annealing leers, P (4) 140.
**Merrill, D. H.** Tests of Owens-Illinois glass block construction, A (8) 276.
**Mershon, C. B.** Gas immersion heaters installed in pickle room, A (8) 271.
**Mertens, H.** Windshields of safety glass only, A (8) 276.
**Merz, K.** Granulation test of abrasives, A (3) 91.
**Mess, J., and Stroud, R.** Vibratory screen, P (8) 286.
**Messer, W. E.** Sedimentation device, P (5) 195.
**Metallgesellschaft, A.-G.** Firing clay, clay shale, etc., P (1) 32; Muffle furnace, P (8) 287.
**Metcalf, R. W.** Feldspar, B (3) 117, B (9) 315; see Tyler, P. M.
**Metz, A.** Dilatometer for investigating glasses, A (6) 215.
**Metz, G. F.** Grinding ceramic materials in ball, pebble, rod, and tube mills, A (2) 78.
**Metzger, K.** Temperature measurements on glassmelting furnaces: I, Directions for installing equipment, B (3) 101.
**Meyer, A.** Diamond grinding disks of known granulation, A (11) 345.
**Meyer, D.** Safety glass, P (1) 17.
**Meyer, F.** Making glass tubes, P (2) 68; Making glass tubes to exact internal form, P (2) 68; Safety glass, P (4) 141.
**Meyer, F. O. W.** See Hartmann, F. K.
**Meyer, H. C.** Economics of less familiar elements, A (10) 339.
**Meyer, K., and Stransky, H.** Determining resistance to thermal shock of glass, A (2) 60.
**Meyer, S.** Infra-red and ultra-violet absorption of glasses—dependence upon temperature, A (11) 350.
**Meyer, W.** True gold paints for glass and porcelain industries, A (4) 130.
**Meyer, W. W.** Computation of heat treatments for whiteware bodies, A (4) 147.
**Meyer-Hoissen, O.** See Geilmann, W.
**Mezener, B., and Wehrli, S.** Micromethod for determining melting points, A (5) 201.
**Michel-Lévy, A., and Wyart, J.** Utilization of high temperatures and pressures produced by detonation of explosives in artificial reproduction of minerals: zincite and willemite, A (7) 258.
**Middleberg, A. W. F.** See Gravesteia, H.
**Middleham, T. H.** See Sarjant, R. J.
**Middleton, E. L.** Dust hazard in industry, A (10) 344; see Brammall, A.
**Mid-West Abrasive Co.** Polishing cement, A (4) 127.
**Migeot Frères.** Decorative enamel, P (5) 172.
**Mikei, I. Ya.** Chemical nature and formation of glauconite, A (7) 261.
**Mikulinskii, A. S.** Obtaining corundum in a shaft furnace through $Al_2S_3$, A (2) 73.
**Miles, J. R.** See Fassin, G.
**Miley, H. A.** Thickness of oxide films on Fe, A (6) 234.
**Miller, A. F.** Rock wool blow chamber, P (11) 352.
**Miller, A. J. M.** Treating glass, P (1) 17.
**Miller, A. M.** See Curtis, H. A.
**Miller, C. H.** Structural element, P (9) 307.
**Miller, E.** Safety take-out for glassware making machines, P (1) 17.
**Miller, H. G.** Valve-grinding apparatus, P (11) 347.
**Miller, J. F.** Reagent for detecting Ce, A (8) 291.
**Miller, S. L.** End liner for grinding mills, P (11) 361.
**Miller, W. J.** Apparatus for manufacturing pottery, P (1) 31, P (3) 112; Method and apparatus for manufacturing pottery, P

(10) 333; Process and installation for making pottery, P (5) 194.
**Miller, W. J., and Reek, A.** Apparatus for manufacturing pottery, P (6) 227.
**Millett, H. C.** Lurgi process for complete gasification of coal with O under pressure, A (4) 154.
**Milligan, L. H.** Diamond abrasive body, P (3) 92.
**Millikan, C. B.** See Compton, K. T.
**Millott, J. O'N.** Coal seams of North Staffordshire—ceramic utilization, B (1) 34.
**Minami, E.** Rare-earth elements in clays and shales, A (5) 116.
**Mindlin, R. D.** Analysis of doubly refracting materials with circularly and elliptically polarized light, A (1) 41.
**Mine Safety Board.** Safety catches and arresting devices for cages, skips, and cars in mine shafts and slopes—Decision 28, B (8) 294.
**Mini, W. A.** Shears-sharpening machine, P (6) 209.
**Minich, V. E.** Abrasive throwing machine, P (1) 31.
**Mining Engineering Co., Ltd.** See Nyborg, T. G.
**Minkin, G. M.** See Bezborodov, M. A.
**Minnick, F. L.** Quartz mill, P (10) 336.
**Mirza, K.** Outline of geological history of Hyderabad State—mineral resources, B (10) 341.
**Misch, L.** Two intermetallic compounds of Be with Fe, A (2) 87.
**Miser, H. D., and Stevens, R. E.** Taenolite from Magnet Cove, Ark., A (5) 198.
**Mishulovich, L. Ya.** Causes of flaws in flooring tile, A (6) 223.
**Mitchell, W. B.** Furnaces for use with machines for manufacturing glass articles, P (9) 305.
**Mitford, J. B.** Glass article tempering apparatus, P (6) 218; Tempered-glass article, P (4) 141, P (8) 279.
**Mitra, D. R., and Reid, A.** Properties of Indian bentonites, A (5) 197.
**Miyagi, S.** Electrical resistivity of glasses containing Fe oxides, A (9) 303.
**Modigliani, P.** Fiber production from molten glass, P (5) 182; Method and apparatus for producing fibers from molten glass, P (6) 219.
**Moennich, L.** Temperature regulation of electrical industrial furnaces, A (2) 79.
**Moffett, E. G.** Portable surface grinding machine, P (5) 171.
**Mohr, L.** Structure of Portland cement clinkers: II, A (2) 55; III, Interrelation between types of belite, A (4) 133.
**Molchanova, O. S.** Chemical strength of glass in dependence on thermal treatment, A (7) 247.
**Moll, N.** Goblet design, P (8) 271.
**Moller, H.** X-ray picture of coarse structure and endurance strength, A (11) 366.
**Moller, J. H.** Sheet-glass handling apparatus, P (4) 141.
**Möllering, K. F.** See Stampe, G.
**Monack, A. J.** Glass strains at high temperatures, A (11) 350.
**Monarch Tool Co., Ltd., and Wilson, H.** Machine for producing or grinding hobs, P (1) 3.
**Monk, R. H., and Ross, A. S.** Method of preparing $TiO_2$, P (5) 203; Producing $TiO_2$, P (1) 45; $TiO_2$ preparation, P (8) 292; $TiO_2$ processing method, P (1) 45; Ti ore processing, P (8) 290.
**Monsanto Chemical Co.** Vitreous enameled products, P (9) 301.
**Montagne, P.** Calculation of flame temperature by successive approximations, A (11) 361.
**"Montecatini" Società général per l'industria mineraria ed agricola.** Alkali silicate, P (5) 202; Sodium dichromate, P (6) 236.
**Montgomery, R. J.** Ceramic education and employment, A (9) 317; Use of sand in assay crucible bodies, A (9) 308; see Elliott, A. C.
**Montoro, V.** Metastable $\gamma$-$Fe_2O_3$ phase in samples of magnetite in process of transformation, A (11) 363–64.
**Moomaw, G. D.** Grinding and polishing machine, P (1) 3.
**Mooney, F. X.** See Winkler, F. W.
**Moore, B.** Fused silica in laboratory, A (2) 62.
**Moore, B. J.** Tunnel kiln firing: I, Open flame *vs.* muffle, A (11) 362.
**Moore, B. N.** Nonmetallic mineral resources of eastern Ore., B (1) 40.
**Moore, D. G.** See Pole, G. R.
**Moore, J. E.** Bottle design, P (3) 94.
**Moore, J. E., and Koons, B. H.** Bottle design, P (3) 94.
**Moore, R. S.** Choosing right brick for insulated furnace walls, A (4) 142.
**Moorshead, T. C.** Apparatus for feeding molten glass to glassforming machines, P (5) 182; Glassforming machine, P (9) 305; Means for feeding glass to shaping machines, P (4) 141.
**Moorshead, T. C., and Dorman, E. P.** Machine for making hollow glassware, P (4) 140.
**Moorshead, W. A.** Proposals for standard basis for expression of tank-furnace performances, A (8) 275.
**Moran, R. F.** See Weber, M., Jr.
**Morant, H. de.** Glass from ancient Egypt, A (2) 62.
**Morawietz, W.** See Zintl, E.
**Moray, M.** Ternary system, A (5) 202.
**More, C.** Chrome and refractory materials, A (1) 18; Co and its compounds, A (4) 156.
**Moretti, R.** Cast sillimanite glass pots, A (2) 69; Chemical composition of clays, kaolins, etc.—thermal resistance, A (1) 35; Italian clays for glassmelting tanks, A (3) 104.
**Morey, G. W.** Availability of optical glass in America, A (11) 349; Optical glass, P (1) 16; Rock formation, A (9) 314; Studies in silicate chemistry of Geophysical Laboratory of Carnegie Institution of Washington, A (1) 39; see Kracek, F. C.
**Morey, G. W., and Ingerson, E.** Pneumatolytic and hydrothermal alteration and synthesis of silicates, A (1) 39.
**Morgan, G.** Trend of research in plastic materials, A (9) 319.
**Morgan, J. D., and Lowe, R. E.** High-temperature refractory, P (3) 107.
**Morgan, J. W.** Sound-absorbing and heat-insulating unit, P (6) 220.
**Moriya, T.** See Tabata, K.
**Moriya, T., and Tabata, K.** Thermal endurance of glass: III, A (9) 305.
**Moriyasu, S.** Electrical resistance of magnesia–alumina–silica–alkalis system, A (3) 108; Electrical resistance of porcelain, A (2) 76; Electrical resistance of talc–kaolin system, A (3) 109.
**Morlock, H. A.** Construction for furnaces, P (10) 332; Refractory construction for furnaces, P (10) 332.
**Morrell, J. C.** See Thomas, C. L.
**Morrison, F. C.** See Gillis, H. B.
**Morrison, J. G.** Causes and prevention of grinding cracks in hardened and ground tool steels, A (3) 91.
**Morrow, J. B., and Proctor, C. P.** Variables in coal sampling, A (11) 362.
**Morse, W. C., Woollett, G. H., and Coulter, V. A.** Mississippi clay investigations, A (1) 47.
**Morsman, J.** Decorative porcelains, A (10) 323.
**Morton, H. T.** Lubrication of ball and roller bearings, A (1) 29.
**Morton, W. A.** Glass-feeding apparatus and method, P (6) 218; Glassmelting furnace, P (5) 183; Melting and refining glass, P (9) 306.
**Möser, A.** Manufacture of vitrified brick in ordinary brickworks, A (9) 306; Porosity of tank blocks, A (9) 308.
**Moser, H., and Tingwaldt, C.** Thermal apparatus and methods of measurements, A (4) 152.
**Moskvin, B. N.** Effect of conditions of polishing and composition of polishing media on rate of polishing of optical glass, A (2) 61; see Neumann, T. T.
**Moskvin, B. N., and Neumann, T. T.** Effect of chemical composition of silvering bath on silvering process, A (5) 177.
**Mott, H. R.** Bottle design, P (7) 244.
**Mould, A.** Pyrometry, A (1) 30.
**Moulton, H. R.** Lens, P (6) 218.
**Mounier, B. E.** Method and apparatus for tempering glass, P (10) 328.
**Mounts, M. T.** See Winkler, F. W.
**Movschevich, I. L.** Olivine (dunite) refractory materials, A (2) 73.
**Moyer, H. V., and Remington, W. J.** Coprecipitation and $p_H$ value of precipitations with 8-hydroxyquinoline, A (10) 342.
**Moyer, J. A.** Oil fuels and burners, B (3) 114.
**Moyer, P.** Aluminum hydroxide production, P (9) 308.
**Mueller, C. S.** Chaser grinding means, P (2) 52.
**Mueller, H.** Theory of photoelasticity, A (2) 87; Theory of scattering of light, A (11) 351.
**Mueller, R.** Corrosion resistance of alloy modifications, A (9) 310.
**Mueller, W.** See Libovitz, H.
**Mueller-Cunradi, M., Otto, M., Daniel, W., and Werner, R.** Compositions of matter, P (10) 327.
**Mugnerot, M.** Rammed refractory materials, A (10) 331.
**Muir, J.** Tension and notched-bar tests on alloy steel, A (1) 9.
**Mukhin, E. J.** See Krakau, K. A.
**Mulholland, D. E.** Abrasive sleeve, P (4) 128; Abrasive sleeves and rolls, P (9) 295; Abrasive wheel, P (7) 241.
**Mulholland, D. E., and Mulholland, W. S.** Abrasive wheel and method of using, P (7) 241.
**Mulholland, V.** Weir for glassmaking tank, P (10) 328.
**Mulholland, W. S.** See Mulholland, D. E.
**Muller, B. R.** See Wernicke, F. W. O.
**Müller, E. A. W.** Application of technical X-ray irradiation, A (1) 27; Relation between coarse structure and static strength of welds, A (11) 366.
**Müller, G.** See Carlsohn, H.
**Müller-Neuglück, H. H.** Sources of error in determining calorific value of fuels, A (6) 228.
**Mumford, R. W.** Potassium chloride from brine of Searles Lake, A (10) 340.
**Munro, A. C.** Classification, P (4) 153; Concentrator, P (4) 153; Elevator classifier, P (4) 153.
**Munyan, A. C.** Occurrence of gypsum in Kentucky, A (5) 197.
**Murdoch, H. B., and Kent, B. B.** Method and apparatus for removing enamel, etc., from metallic objects, P (7) 246.
**Murdoch, J., and Webb, R. W.** Minerals from southern Calif., A (10) 340.
**Murgatroyd, J. B.** Thermal-endurance tests for glassware, A (4) 140.
**Murray, C. A., and Bartell, F. E.** Wetting characteristics of solids and liquids, A (10) 335.
**Musgrave, F. F.** Fuel oils, A (1) 33.
**Mussgnug, G.** Clinker quality and liter weight, A (9) 298; Properties of clinkers rich in Mn and S, A (9) 298; Reducing firing, color changes, and strength in Mn- and S-containing clinkers, A (4) 132.
**Mussmann, H.** Elastic after-effect—relation to optical after-effect, A (10) 326.
**Musyakov, V. A.** See Strokov, F. N.
**Muzzo, R. C.** Table surfacer, P (5) 171.
**Myasoedov, A. N., and Bondarev, A. I.** Clays of U.S.S.R. for glass pots, A (3) 103.
**Myres, J. N. L.** Anglo-Saxon pottery, A (4) 128.

**Nacken, R.** Reactions of Ca silicates and Ca aluminates with water, A (2) 55.
**Nagaeda, S.** See Nagai, S.
**Nagai, S.** Hydraulic refractory cements: I–II, A (5) 186.
**Nagai, S., and Katayama, J.** Extraction of alumina from highly aluminous raw materials, A (5) 186; Refractory cements and mortars: II, A (4) 132.
**Nagai, S., and Nagaeda, S.** Chemical composition and water solubility of glasses: V, A (4) 136.
**Nagelschmidt, G.** X-ray investigations on clays: III, Differentiation of micas by X-ray powder photographs, A (8) 290.
**Nagerova, E. I., and Petrova, A. D.** Colorimetric determination of silica in lime solutions, A (8) 291.
**"Nagybátony-Uzlaker" Vereinigte Industriewerke A.-G.** Porous ceramic bodies, P (5) 204.
**Naklonov, V. A.** Automatic determination of moisture in solid fuel and gases, A (1) 41.
**Náray-Szabó, I.** Structure of $ZrSi_2$, A (10) 343.
**Náray-Szabó, I. and Sasvári, K.** Structure of cryolite, A (9) 317.
**Náray-Szabó, s. v.** See Náray-Szabó, I.
**Nason, H. K.** Safety glass, P (10) 328.
**Natelson, S., and Connor, E. B.** Determination of C and H—compact, movable, and easily built combustion train, A (10) 336.
**National Bureau of Standards.** Velocity of flames from gas burners, A (3) 113.
**National Research Council, Division of Geology and Geography.** Report of Committee on Sedimentation (1936–1937), B (7) 263.
**Naudet, M.** Losses in heating furnaces, A (11) 362.

**Naumov, M. M.** Charging green brick in circular brick kilns, A (4) 153.
**Nead, J. H.** See Porter, F. R.
**Nealey, J. B.** Cleaning and pickling tanks heated by gas method, A (10) 324; Manufacture of sanitary ware by unicast method and gas-fired kilns, A (4) 147; Radiant tube furnace reduces fuel costs in porcelain enamel firing, A (2) 58; Using natural gas for brick production, A (3) 113.
**Nederbragt, G. W.** Gas-liquid equilibria for system methane–butane, A (10) 336.
**Neil, M. C.** Refractory block and structure, P (8) 282.
**Neimann, W.** Grinding, mixing, and clay preparation in clay industry, A (5) 193.
**Nekrassov, I.** See Astakhov, I.
**Nel, L. T., Jacobs, H., and Bozzoli, G. R.** Wonderstone, B (3) 117.
**Nelson, C. S.** Composition of matter and method of manufacturing, P (7) 241; see Wooddell, C. E.
**Nelson, E. F.** See Egloff, G.
**Němeček, F.** Flaws in structure of roofing tile, A (7) 255.
**Nenninger, L. F.** Apparatus for lapping, P (5) 170; see Ernst, H.
**Nessen, W. von.** Handle for glassware, P (6) 218.
**Neuberger, A.** Pipet apparatus for elutriation analysis, A (11) 360.
**Neue Glasindustrie G.m.b.H.** Forming hollow ware by casting molten glass, P (8) 277.
**Neuhof, B.** Manufacture of heat- and sound-insulating material, P (4) 146.
**Neukirchen, J.** Carbon brushes, B (3) 123.
**Neumann, T. T.** See Moskvin, B. N.
**Neumann, T. T., and Moskvin, B. N.** Effect of chemical pretreatment of glass surface on silvering process, A (2) 61.
**Newbold, J. A.** See Hutchinson, R.
**Newcombe, F. A.** See Richardson, H. K.
**New Holland Machine Co.** Swing-hammer pulverizer, A (4) 152.
**Newman, E. S., and Wells, L. S.** Heats of hydration and transition of $CaSO_4$, A (9) 298.
**Newton, E. W.** Goblet design, P (2) 54.
**Newton, R. H.** See Curtis, H. A.
**Nicholls, P., Rice, W. E., Landry, B. A., and Reid, W. T.** Burning of coal and coke treated with small quantities of chemicals, B (2) 81.
**Nicholls, W. H., Sr.** Sand mulling machine, P (7) 259.
**Nichols, M. L., and Schempf, J. M.** Simple method for preparing glass electrodes, A (10) 335.
**Nicholson, C. G.** See Andrew, J. H.
**Nicholson, C. M.** Nepheline syenite, industrial mineral, A (7) 262.
**Nicolas, C. M. J. A. F.** Apparatus for breaking up mineral containing clay, loam, etc., by washing, P (4) 153.
**Nicolet, C. E.** Skate sharpener, P (8) 269.
**Nicolls, J. H. H.** See Gilmore, R. E.
**Nicolsky, B. P.** See Nikol'skii.
**Nieuwenburg, C. J. van.** Pneumatolytic synthesis of silicates, A (1) 39.
**Nieuwenkamp, W.** Structure of high cristobalite, A (8) 292.
**Niggli, P.** Chemical composition of alkali micas, A (1) 35.
**Nikitin, B. A., and Vdovenko, V. M.** Adsorption of Ra by glass, A (6) 214.
**Nikogosyan, H. S.** Physicochemical study of nacrite from Simferopol, A (4) 157.
**Nikolaev, A. V.** See Kurnakov, N. S.
**Nikolenko, V. S.** Ukrainian clays and their fitness for production of dry-pressed brick, A (1) 39.
**Nikol'skii, B. P.** Theory of glass electrode: I, A (8) 292.
**Nims, H. D.** Choosing and protecting a trade mark, A (6) 236.
**Nirenshtein, D. A.** Determining refractoriness of C-containing refractory materials, A (1) 19; see Budnikov, P. P.
**Nischk, K.** Krupp hard metal, Widia, A (6) 225.
**Nisioka, U.** Equilibrium diagram of system $CaO \cdot MgO \cdot 2SiO_2$–$MnO \cdot TiO_2$, A (4) 161; see Iwase, K.
**Niven, W. W., Jr.** Apparatus for determining particle size, A (10) 333.
**Noble, O. C.** Jar design, P (4) 131.
**Noel, D. O., Shaw, J. D., and Gebert, E. B.** Production and testing methods of metal powders, A (11) 360.
**Nokes, M. C.** Modern glassworking and laboratory technique, B (6) 217.
**Nokhratyan, K. A.** Artificial cooling of circular kilns, A (4) 153.
**Nold, H. E.** Selective mining of clay, A (3) 123.
**Noll, C. A.** See Sheen, R. R.
**Noll, W.** Advances in knowledge of clay minerals, A (11) 363; Formation conditions of kaolin, montmorillonite, sericite, pyrophyllite, and analcite, A (1) 36.
**Nölling, K.** Enamels, P (6) 214.
**Non-Metallic Minerals, Inc.** Refractories, P (1) 24; Refractory products, P (2) 75.
**Nordberg, M. E.** See Hood, H. P.
**Nordmann.** Spun glass for insulation of railway equipment, A (1) 14.
**Nordstroem, G.** Alloys for temperatures above 2100°F, A (3) 109.
**Norman, G. H. C.** Methods of sampling and dust determination in mines of Ont., A (6) 237.
**Norris, C.** Stained glass—history and appreciation, A (7) 249, A (11) 347.
**North, V. B.** See Brown, C. W.
**Northwood, J. H.** See Webb's Crystal Glass Co., Ltd.
**Norton, F. H.** History of glass manufacture in New England, A (3) 99; Instrument for measuring workability of clays, A (2) 78.
**Norton, F. H., and Speil, S.** Fractionation of a clay into closely monodispersed systems, A (11) 365; Measurement of particle sizes in clays, A (4) 162.
**Norton, J. T.** X-ray methods of studying stress relief in welds, A (3) 98.
**Norton Co.** Apparatus for dressing abrading wheel, P (1) 3; Cam grinding machine, P (1) 3; Grinding or abrading machine, P (1) 3; Grinding machine table reciprocating mechanism, P (8) 268; Hydraulically operated lapping machine, P (1) 3; Lapping machine, P (1) 3; Machine for grinding crank pins, P (6) 208; Norton's house publications, A (6) 237; Wheel-positioning mechanism for grinding or abrading machine, P (1) 4.
**Norton Grinding Wheel Co., Ltd.** Abrasive articles, P (5) 169, P (8) 268; Abrasive bodies, P (8) 268; Abrasive wheel, P (2) 52; Article of self-bonded granular material, P (1) 3; Articles of ceramic bonded abrasive material, P (10) 322; Electric furnaces, P (6) 227; Grinding or abrading wheels, P (1) 3, P (2) 52, P (4) 128; Grinding wheel, P (6) 208, P (9) 296; Making boron carbide, P (9) 296; Manufacture of ceramic-bonded abrasive materials, P (10) 322; Mounted grinding or abrading wheels, P (2) 52; Segmental grinding wheels, P (8) 269.
**Norton Grinding Wheel Co., Ltd., and Haddock, W.** Grinding wheels, P (4) 128.
**Novak, V.** Development of mechanical analysis of soil, A (5) 196.
**Novikov, A. N.** Manufacture of SiC heaters, A (1) 20.
**Novotny, E. E.** Abrasive body, P (6) 208.
**Nown, F.** Manufacture of covers for abrasive tools, P (5) 170.
**Nukiyama, S.** Thermal conductivity of glass, chilled glass, quartz, fused quartz (transparent), coal, isolite, porcelain, etc., A (1) 15.
**Nurnberger, C. E., and Livingston, R.** Kinetics of coloring of glass by X-rays, A (1) 12.
**Nussbaumer, M.** Central lubrication under pressure for brick machines, A (2) 78.
**Nutting, P. G.** Bleach clay solubility, A (11) 363.
**N. V. Hollandsche Maatschappij voor de Vervaardiging van Glas.** Apparatus for annealing drawn glass, P (8) 276; Apparatus for drawing glass sheets, P (3) 101, P (6) 217, P (10) 327; Apparatus for making glass sheets by vertical drawing, P (5) 182, P (6) 217; Apparatus for raising an endless glass band from fused glass, P (3) 101; Apparatus for vertically drawing glass sheets, P (6) 217.
**N. V. Maatschappij tot Beheer en Exploitatie van Octrooien.** Forming siliceous fibers (glass fibers), P (6) 218; Glass fibers, P (5) 182; Making glass threads and wool by centrifugal process, P (10) 328; Manufacture of fibers from glass, etc., P (10) 328; Melting and refining of glass, etc., P (7) 251; Method and apparatus for drawing fibers from a viscous substance, P (2) 68; Method and apparatus for forming siliceous fibers, P (6) 219; Packing glass fibers, P (10) 328.
**N. V. Philips' Gloeilampenfabrieken.** Device for controlling feed of charges of glass to glassblowing machine, P (6) 217; Glass for discharge tube, P (1) 15.
**Nyborg, T. G., and Mining Engineering Co., Ltd.** Extraction of dust from air and gases by spraying with liquids, P (10) 336.
**Nyland, E. R.** Gear lapping machine, P (5) 170.

**O., W.** Advances in enamel industry, A (4) 134; Elimination of enamel defects, A (11) 348.
**Oakes, B. J.** Waterproof sandpaper manufacture, P (4) 128.
**Oakley, K. P.** Romano-British pottery in Buckinghamshire, A (10) 323.
**Oberfell, C. R.** See Whittemore, J. W.
**Oberlies, F.** See Eitel, W.
**O'Brien, J. J., and Juredine, G. M.** Making red pigment, P (7) 264.
**O'Brien, M. P., and Hickox, G. H.** Applied fluid mechanics, B (6) 227.
**O'Brien, W. A.** Silica firestone, A (9) 308.
**Obst, W.** Borosilicate frit for enamel, A (5) 173.
**O'Connor, G. K.** Fluid pressure regulator, P (5) 194.
**O'Dell, A. E.** Apparatus for electrically measuring grain-size range, P (9) 311.
**Odom, E. H.** Grinding machine, P (7) 241.
**O'Donnell, H. J.** See Thiessen, R.
**Oehler, L. A.** Better metal from blast furnaces and open hearths, A (11) 353.
**Offutt, J. S.** Gypsum as chemical raw material, A (4) 131.
**Ogilvie, W.** Grinding machine, P (7) 241.
**Ogle, K. N.** Correction of aniseikonia with ophthalmic lenses, A (1) 28.
**Ohio Ceramic Industries Assn.** Recommendations on de-airing, A (4) 152.
**Ohl, F.** Grinding and polishing of synthetic materials, A (5) 169.
**Okaya, T., and Ishiguro, K.** Fracture of glass plates by percussion, A (7) 247.
**Okazawa, T.** See Yonemura, S.
**Oknova, T. M.** See Kupletskii, B. M.
**Okuno, T.** Japanese acid clays, A (3) 116.
**Okuyama, K.** Frosted glass bulb, P (9) 305.
**Oleen, H. D.** See Drake, C. A.
**Olive, T. R.** Engineering methods in efficient pottery manufacture, A (4) 147.
**Oliver, F. J.** Twenty-five determinations on cast iron in 25 minutes, A (7) 245.
**Oliver, H.** Reliability of thermal conductivity measurements for insulating materials, A (5) 188, A (7) 254.
**Olmer, F.** Reduction of Fe oxides by CO in presence of natural impurities, A (7) 260.
**Olpin, A. R.** See Compton, K. T.
**Öman, E.** Alkali silicates, P (7) 264.
**Ondruš, F.** Manufacture of pressed roof tile, A (7) 256.
**O'Neill, F.** Glassware forming machine, P (5) 183.
**Open Hearth Combustion Co.** Checkerbrick assemblies for furnace regenerators, P (5) 180.
**Oppenheimer, J.** See Dubilier, W.
**Ordynskaya, E. S., Petin, N. N., and Khigerovich, M. I.** Kinetics of carbonation processes of lime-sand autoclaved materials, A (1) 17.
**Orlovskii, Ya. A.** Refractory ladles with high grog content for steel casting, A (6) 222.
**Orme, W. L.** Table decorating unit, P (7) 251.
**Orowan, E.** Crystal plasticity: V, Completion of slip-velocity formula, A (2) 84.
**Orsoev, A. A.** Magnesite of East Siberia, A (6) 230.
**Ortegren, H. A.** Machine for honing conical surfaces, P (3) 92.
**Osa participations industrielles, Soc. anon.** Uniting quartz and metal pieces, P (7) 251.
**Osada, K.** See Yonemura, S.
**Osborn, W. J.** See Estep, T.
**Oser, J. I.** See Bertolet, E.
**Oshman, V. A., and Zerchaninova, T. K.** Determining small amounts of Zr by phosphate method, A (3) 118.
**Osipov, M. V.** See Litvakovskii, A. A.
**Österreichisch Amerikanische Magnesit A.-G.** Metallurgical furnace masonry, P (5) 189.
**Österreichische Glasfabriken und Raffinerien J. Inwald, A.-G.** Manufacturing light-diffusing glass articles, P (7) 250.
**Ostrikov, N. V.** Brick for roof of glass furnaces, P (5) 189; Refractory cement, P (5) 190.

**Ostroumov, E. A.** Separation of Fe, Al, Cr, U, Zr, and Ti from Mn, Co, Ni, Ca, Sr, Ba, Mg, and alkaline metals with pyridine, A (6) 234.
**Ota, H.** See Kamita, K.
**Otis, R. M.** See Fowler, A. A.
**Ott, C. L., and Balsiger, H. E.** Automatic line bearing grinder, P (3) 92.
**Otten, H.** Financial statements calculated for short periods in hollow glass factories, A (5) 203.
**Ottersbach, C. A.** Acid-stable and nonpoisonous enamel, A (5) 173.
**Ottersbach, C. P.** Rational operation of mixing and melting, A (8) 272.
**Otto, C. E.** See Edwards, A. E.
**Otto, G. H.** Statistical methods for effecting improvements on Jones sample splitter, A (4) 152.
**Otto, M.** See Mueller-Cunradi, M.
**Owen, C. J. A.** See Collingham, E. B.
**Owen, W.** Apparatus for bending glass sheets, P (5) 182; Double window construction, P (4) 140; Mirror-plating apparatus, P (11) 352; see Heichert, H. S.
**Owens, C. W., Jr.** See Greaves-Walker, A. F.
**Owens, J. S.** Helpful accessories in practical spectrographic analysis, A (4) 162; Quantitative spectrochemical analysis—chemical and metallurgical applications, A (8) 291.
**Owens-Illinois Glass Co.** Apparatus for decorating bottles, P (11) 352; Apparatus for making fibers from glass, P (3) 101; Glass air filters, A (1) 12; Glass block in container plant, A (2) 62; Hollow glass blocks, P (8) 278; Manufacture of glass blocks, P (8) 278; Production of glass brick, P (7) 251.

**P., J.** Binding materials for assembling glass panels, A (8) 272.
**P., L.** Optical pyrometer, A (2) 78.
**Pabst, A.** Heavy minerals in granitic rocks of Yosemite region, A (5) 196.
**Paddock, O. H., and Greaves-Walker, A. M.** Vitreous article coloring process, P (8) 279.
**Page, R. T.** Ocular micrometer for dust counting, A (9) 310.
**Paggi, L.** Manufacture of laminated glass, P (6) 219.
**Paić, M.** Glass electrode for differential titration, A (11) 360.
**Paić, M., and Deutsch, V.** Adsorption of proteides: Effect of *p*H on adsorption of hemoglobin by kaolin, A (3) 118; Effects of salts on adsorption of hemoglobin by kaolin, A (6) 232.
**Pal, N., and Palsales, Ltd.** Silicate surface coatings, P (1) 48.
**Palache, C.** Leightonite, a new sulfate of Cu from Chile, A (5) 196–97.
**Palatnik, L. S.** See Budnikov, P. P.
**Paleev, I. I.** See Shumilin, A. A.
**Palkin, S.** See Chadwick, T. C.
**Pallas, V. R.** Surface abrasive and polishing machine, P (3) 93.
**Palmer, C. R.** See Anderson, C. E.
**Palmer, W. E.** Darkening of whiteware glazes in decorating kiln, A (3) 108.
**Palmqvist, S.** Quantitative determination of silica in quartzites by evaporation with HF, A (3) 120.
**Palsales, Ltd.** See Pal, N.
**Pancoast, W.** See Forman, L. P.
**Parent, P. A.** See White, C. E.
**Parke, R. M., Crosby, V. A., and Herzig, A. J.** Graphitization of gray cast iron, A (4) 135.
**Parker, G. D.** See Brown, C. W.
**Parker, G. M.** Gas radiant tubes in enameling furnace, A (4) 134.
**Parker, G. V.** Brick for surfacing roads, P (11) 353.
**Parker, J. L., and Starns, C. H.** Manufacturing cementitious substance from blast-furnace slag, P (10) 324.
**Parker, J. W.** Grinding wheel dressing unit, P (11) 346.
**Parker, L. T.** How engineers may profit from patented inventions, A (6) 236; Liability of employers, A (7) 265.
**Parkin, M., and Turner, W. E. S.** Special alloys in glass industry, A (9) 304.
**Parkinson, F. D.** Colored or decorative glass, P (4) 140.
**Parks, W. J.** Screening apparatus, P (1) 32.
**Parmelee, C. W., Badger, A. E., and Debenham, W. S.** Glass melts from alkali-lime-magnesia-alumina-boric oxide-silica mixtures, A (4) 138.
**Parmelee, C. W., and Lyon, K. C.** Maximum bubble pressure (Jaeger) method for measuring surface tension of molten glass, A (8) 275.
**Parravano, N., and Caglioti, V.** Research on pozzuolana, A (1) 6.
**Parrish, W.** See Dorris, J. E.
**Parsons, D. E.** Tests at Bureau of Standards on permeability of masonry walls, A (8) 279.
**Parsons, J. B.** Sample splitter, P (10) 336.
**Partridge, H. M.** See Bowles, J. A. C.
**Partridge, J. H.** See General Electric Co., Ltd.
**Partridge, J. H., and Lait, J. R.** Manufacture of refractory articles from pure oxides of high melting point, A (1) 20.
**Partsch, F. W.** Apparatus for removing steam from grinders, P (1) 3.
**Pask, J. A.** Quadrant-chart type nomograph applied to clay slips, A (4) 162.
**Passarini, U.** See De Carli, F.
**Passauer, H.** Annealing chamber furnaces, A (3) 99.
**Patent Treuhand-Ges. für elektrische Glühlampen m.b.H.** Coating discharge lamps with granular material, P (3) 102; Joining quartz articles to surfaces of metal, glass, etc., P (5) 183.
**Patrick, W. A.** See Redfern, S.
**Patterson, W. E.** High aluminous cements, A (9) 307; Practical tests on refractory mixes, A (1) 21.
**Pattinson, G. H.** Hammers for impact-breaking or crushing machines, P (2) 80.
**Pattison, H. J., and Barton, W. K.** Portable grinding or filing machine, P (3) 93; Portable polishing machine, P (4) 128.
**Patton, J. R., and Ferguson, J. B.** Base-exchanging properties of synthetic aluminosilicate materials: II, A (3) 118.
**Paul, H.** Light-diffusing glass, P (4) 140.
**Pauling, H.** Manufacturing MgO and $CaCO_3$, P (10) 332.
**Paulson, P. M.** Abrasive material, P (5) 169.
**Payne, C. J.** See Anderson, B. W.
**Pazsiczky, G. v.** Glass fibers, A (7) 247; Manufacture of glass threads, P (9) 306.
**Peacock, M. A.** Relation of leightonite to polyhalite, A (5) 198.
**Pearce, C. S.** Improved cabinet design reduces enamel chipping, A (1) 8; Open-hearth iron taps a new market, A (10) 325.
**Pearne, F. Y., and Fackt, G. P.** Terra cotta grinding machine, P (9) 309.
**Pearson, E. J. & J., Ltd.** See Hutchinson, E. H.
**Pearson, E. S.** Application of statistical methods to industrial standardization and quality control, B (1) 47.
**Pearson, R. W.** See Trueg, E.
**Pearson, T. F.** Apparatus for feeding molten glass, P (1) 15; Glass article manufacture, P (5) 182; Glass bottle forming apparatus, P (5) 182; Glass bottle or jar manufacture, P (5) 182; Leer for annealing glassware, P (1) 16; Machine for manufacture of glass articles, P (5) 183; Machines for molding glass, P (5) 183; Means for skimming glass in forehearth of glassmelting furnace, P (1) 16; Molten glass feeding method and apparatus, P (8) 278; Suction device for withdrawing molten glass from a tank furnace, P (1) 17.
**Pearson, T. F., and Robson, H. A.** Feeding molten glass, P (1) 15.
**Pearson, T. S.** Stability limits of refractory materials in boiler combustion chambers, A (10) 331.
**Pécheux, H.** Comparative study of electric thermocouples, A (2) 78.
**Peck, A. B.** See Faust, G. T.
**Pecker, J. S.** Centrifugal separating machines, P (2) 79.
**Peddle, C. J.** Annealing leers, A (9) 301.
**Peddrick, C. H., Jr., and Weis, J. H.** Feldspar preparation, P (3) 117.
**Pehrson, A. P.** See Knibbs, N. V. S.
**Peiler, K. E.** Device for blowing and cooling glassware, P (9) 305.
**Peiler, K. E., and Barker, W. T., Jr.** Forehearth for molten glass, P (8) 277.
**Pelagatti, U.** Analysis of technical products derived from bauxite, A (11) 365.
**Pendergast, W. L.** See Heindl, R. A.
**Penney, G. W.** Smoke and dust removal from air, A (2) 89.
**Pennsylvania Salt Mfg. Co.** Making alkali subsilicates, P (4) 164, P (7) 264, P (8) 292; Manufacturing solid $NaAlO_2$, P (10) 343.
**Penta, F.** See Malquori, G.
**Perazzoli, H. J.** Grinding machine, P (7) 241; Track grinder, P (8) 269.
**Peredertl, I. A.** Relation of dissociation temperature of limestone to content of clay matter or magnesia, A (6) 212.
**Perkins, A. T., and King, H. H.** Base exchange in soil separates and soil fractions (sand and silt), A (1) 35.
**Perkins, W.** Glass building block design, P (6) 211.
**Permyakov, V. M.** Hydrothermal synthesis of kaolin, A (7) 261.
**Perrault, J.** See Guillon, E.
**Perruche, L.** Diatomites, A (2) 82.
**Perry, H.** See Gilt Edge Safety Glass, Ltd.
**Perry, J. B., and Kirwan, G. M.** Bald Eagle magnesite mine, Calif., A (4) 155.
**Persiee, K. K.** Glass as building material, A (8) 274.
**Pertsov, V. N.** Mechanical properties of powders: III, Effect of moisture on mechanical properties of clay paste, A (4) 151; see Veselovskil, V. S.
**Perutz, M.** "Iron-rhodonite" (from slag) and pyroxmangite—relation to rhodonite, A (1) 37.
**Peters, F. P.** Engineering as a career, A (1) 46; Ni-Cr alloys for electric resistors, A (1) 29.
**Peters, R.** Tumbler design, P (3) 94.
**Petersen, H.** Heat-resisting steel in enamel industry, A (6) 213; Heat technology in enamel industry, A (6) 213.
**Petersen, W.** Varying plasticity of kaolins, A (3) 123.
**Petersilie, F.** Solid porous bodies, P (10) 332.
**Peterson, J. D., and Jennings, D. S.** Chemical equilibrium between soluble salts and base-exchange compounds, A (8) 288.
**Petin, N. N.** See Ordynskaya, E. S.
**Petit, L. A. E.** See Assurex "Le Roi des Verres de Sécurité" Magnien, Monnier, & Cie.
**Petrascheck, W.** Deposits of usable minerals, rocks, and earths in Austria, A (6) 230.
**Petrov, V. P.** See Belyankin, D. S.
**Petrova, A. D.** See Nagerova, E. I.
**Petty, F. J.** Bottle design, P (5) 172; Packer jar design, P (3) 94
**Pettyjohn, J.** Nickel dip treatment of enameling iron, A (7) 245.
**Pevsner, N.** Industrial art in England, B (2) 54.
**Pfaff, H. E., and McIntosh, A. H.** Building material, P (6) 212.
**Pfann, H.** See Vosburgh, W. C.
**Pfefferkorn, K.** Action of earthenware glazes on bodies in glost kiln, A (3) 107; Fine ceramic material, A (10) 332.
**Pfefferkorn, K., and Boden, J.** Separation of alumina during rational analysis (Kallauner-Matějka method), A (1) 44.
**Pfeiffer, W.** See Libovitz, H.
**Pfestorf, G., and Richter, E. F.** Electrical resistance of ceramic materials up to 900°C, A (11) 358.
**Pfaf, H. E.** See Pfaff.
**Phelps, S. M.** Testing refractory materials, A (3) 106; see Bales, C. E.
**Phelps, S. M., and Marbaker, E. E.** Karcite—ceramic material for laboratory equipment, A (4) 165.
**Philip, T. B.** Development of spray drying, A (2) 78.
**Phillimore, J.** Railway history in pottery, A (8) 269.
**Phillips, C. J.** Glass article tempering method, P (8) 277.
**Phillips, F. C.** Mineral orientation in olivine-rich rocks from Rum and Skye, A (6) 230; Universal ore-polishing machine, A (1) 31.
**Phillips, J. W.** Building construction and block, P (10) 329.
**Phillips, R. L.** Design and construction of modern brick pavement, A (4) 142.
**Phillips, W. M.** Effect of polishing on corrosion resistance, A (8) 267.
**Pickwell, P. G.** Principles of drying enameled ware, A (3) 97.
**Picton, W. G.** Material handling equipment: I–VIII, A (3) 110.
**Pidduck, J. C.** Method and machine for applying slip, glaze, etc., to earthenware tile, P (8) 286.
**Pieper, L.** Refractories of German serpentine ores, A (2) 74.
**Piéret.** See Gilard, P.
**Piggott, S.** Long Barrow in Brittany, A (4) 130.
**Pilkington, E. L., and Turner, J. F.** Artificial teeth manufacture, P (5) 191.

**Pilkington Bros., Ltd.** Device for feeding abrasives to glass-grinding tables, P (10) 322; Grinding wheel for glass-grinding apparatus, P (11) 346; Obtaining plastic relief in sandblast decoration, P (3) 102; Refractory materials and articles, P (5) 190; Tempered glass objects, P (8) 278; Tempering glass, P (10) 328.
**Pilkington Bros., Ltd., and Jollie, A.** Apparatus for drawing glass strip, P (1) 15.
**Pilkington Bros., Ltd., and Waldron, F. B.** Glass-grinding apparatus, P (11) 352.
**Pindrik, B. E.** See Taubin, G. B.
**Pines, B. Ya., and Ter-Mikael'yants, E. I.** Artificial clay-like state of super-refractory materials, A (1) 18; Determination of mechanical properties of refractories at high temperatures, A (2) 70.
**Pinkel, I. I.** See Storch, H. H.
**Pioneer Gravel Equipment Mfg. Co.** Large-size roll crusher, A (4) 150.
**Pirani, M.** See General Electric Co., Ltd.
**Pirani, M., and Fehse, A.** Hardness of glasses, A (8) 274.
**Pirumov, G.** Using siallite-alites in refractory industry, A (1) 23; Zircon raw materials for refractory industry, A (1) 23.
**Pittsburgh Plate Glass Co.** Safety glass, P (2) 68.
**Place, P. B.** Alabama coals, A (6) 227; Kansas and Missouri coals, A (6) 228; West Virginia coals, A (7) 260.
**Plant, H. J.** Future of china trade, A (2) 76.
**Plattmann, C. R.** Progress in enamel investigation (1936), A (11) 349; Progress in heavy ceramics (1936), A (3) 103.
**Plechner, W. W., and Hixson, A. W.** Preparing pure $TiO_2$, P (6) 235.
**Pletcher, C.** Water-sand blast gun, P (1) 32.
**Plotkin, E. E.** Abrasive, P (7) 240.
**Poeymirou, H.** See Boudin, L.
**Pohl, W.** Protective gas installations for bright annealing of iron, steel, and nonferrous metals, A (10) 325.
**Polaroid Products, Ltd.** Apparatus for examining strains in glass, A (8) 283; Apparatus for microscopic examination in polarized light, A (8) 283; Photoelastic polariscope, A (8) 285.
**Polden, D. C., and Aldridge, E. W.** Coating glass sheets with polymerized vinyl compounds, P (4) 140.
**Pole, G. R., and Moore, D. G.** Expansion characteristics of kyanite and kyanite-clay mixtures when heated, A (11) 354.
**Polenz, F.** Construction materials for installation technique, A (9) 309.
**Polívka, J.** Experiments with Thermolux glass, A (9) 303; Glass for constructional purposes, A (8) 274; Swedish glass, A (9) 297.
**Pollack, A.** Binding agents of polishing pastes, A (7) 239.
**Pollitt, S. D.** See Birtley Co., Ltd.
**Pollitzer, S.** Sandblasting, etc., for decorating glass, A (8) 270.
**Pollyak, V. V.** See Zhukovskiĭ, G. Yu.
**Poluboyarinov, D. N., and Gracheva, O. M.** Conditions for heating grog products when determining additional shrinkage, A (2) 70.
**Poluboyarinov, D. N., and Karklit, A. K.** Unfired refractory quartz grog brick, A (1) 23.
**Pompei, L.** Production of chromite and magnesite refractories in Italy, A (4) 143.
**Poncelet, A. J.** Sandblasting mechanism, P (4) 153.
**Poncin, H.** Starting of flow in a viscous liquid, A (7) 264.
**Ponomarev, A. I.** Determining silica in silicate rocks, A (2) 84.
**Ponomarev, V. D.** See Dubinskiĭ, A. P.
**Poole, C.** Manufacture of stoneware and concrete pipes—uses, A (5) 191.
**Poortinga, F. E.** Building block design, P (5) 172.
**Popella, H.** See Dudek, W.
**Popp, W. H., and Ebert, E. A.** Vibratory screen, P (10) 336.
**Porcelain Enamel Institute.** How to increase sales, B (3) 98; Production of castings for porcelain enameling, B (1) 10.
**Porsche, F., Ges.** Grinding cams, P (8) 268.
**Porter, F. R., and Nead, J. H.** Characteristics of iron and steel for porcelain enameling, A (2) 56.
**Porter, J. S.** Apparatus for applying abrasive to polishing wheels, belts, etc., P (1) 3.
**Portevin, A., and Castro, R.** Mechanism of reducing silicate inclusions in steel by added Al, A (4) 135.
**Porzellanfabrik F. Thomas Marktredwitz Inh. Porzellanfabrik P. Rosenthal & Co. A.-G.** Decorating porcelain, P (8) 270.
**Porzellanfabrik Kahla.** Device for drying ceramic objects, P (11) 361; Earthenware, P (1) 27.
**Pösner, J.** Excess air in combustion of fuel in annular kilns, A (7) 259; Natural drying sheds, A (7) 258.
**Possekel, H.** Drying apparatus, P (6) 227.
**Postma, F.** Abrading device, P (11) 346.
**Poston, E. V.** Fabricated brick construction, P (3) 103; Fabricated brick wall panel, P (9) 307, P (10) 329.
**Potter, E. V.** Coercive force of rods deformed by torsion, B (11) 365.
**Powel, T. R.** (editor). Subject index to periodicals (1936), B (4) 166.
**Powell, E. R.** Making mineral wool, P (10) 328; Making a thermal insulating unit, P (7) 250; Process and furnace for making mineral wool, P (10) 328.
**Powell, S. T.** Steam contamination: I, Causes, correction, and measurement, A (8) 293.
**Power, H. R.** Adhesives for polishing wheels, A (8) 267; Capillarity and surface tenacity of polishing abrasives, A (11) 345; Composition of modern grinding materials, A (3) 91; Finishing cemented carbides, A (6) 207.
**Powers, R. A.** "Electric eye" in industrial process control, A (1) 28.
**Pozzi, F.** Research on national ceramic raw materials—refractory clays, A (1) 39.
**Pratt, R. W.** See Langeland, E. E.
**Prausnitz, P. H.** Laboratory apparatus and application of filter of porous glass, A (8) 274; Making porous filter bodies of particles of glass, P (7) 250.
**Prentiss, F. L.** Finishing spindle carrier hole by grinding, A (5) 169.
**Preston, E.** Glass for chemical apparatus, A (2) 63; Li in glass and ceramics, A (11) 351; see Holland, A. J.
**Preston, F. W.** Structural glass, P (10) 328.
**Preston, J. S.** Portable photoelectric illumination meter, A (8) 285.
**Preston, M.** American art under New Deal—murals, A (4) 128.
**Prettre, M.** Identification of chemical reactions proceeding in midst of flames, A (6) 228.
**Prever, V., and Goria, C.** Constitution and properties of clayey materials (bentonite and kaolin), A (8) 288.
**Prever, V. S.** Surface defects—importance in practical behavior of metallic materials, A (10) 321.
**Price, F. N. R.** See Sutherland, C. L.
**Priest, A.** Sung fresco and ten Chinese porcelains, A (9) 297.
**Pritchard, O. D.** See Hawkins, R. D.
**Probol, F.** Baffle apparatus for separating dust from gases, P (6) 227.
**Proctor, C. P.** See Morrow, J. B.
**Productive Equipment Co.** Selectro vibrating screen, A (3) 111.
**Produits Vitrifiés St.-Christophe S. A.** Method and apparatus for tempering glass, P (10) 328.
**Prokof'eva, R. V.** See Strokov, F. N.
**Propasky, P.** Machine for decorating sheet glass, A (9) 304.
**Prussing, W.** Collapsible tube enameling machine, P (5) 175.
**Pryce, F. N.** Etruscan vase, A (10) 323.
**Pryor, E. J.** Elements of flotation practice, A (6) 230.
**Pugh, C. T.** See Tudor Safety Glass Co., Ltd.
**Pugh, C. T., and Ash, W.** Process for manufacturing tempered glass, P (5) 183.
**Pugh, J. A.** Some old materials for modern uses, A (4) 142.
**Pukall, W.** Natural and artificial plastic earths, A (2) 82.
**Pulfrich, H.** Ceramic material, P (1) 26; Composite body, P (1) 27.
**Pulfrich, M.** Optical investigations of Mg silicate bodies, A (2) 51.
**Purdy, R. C.** Americans are leaders in ceramics, A (11) 367.
**Puri, A. N., and Anand, B.** Simple electrical salinometer for estimating soluble salts in soils and irrigation waters, A (1) 30.
**Puri, A. N., and Asghar, A. G.** Titration curves and dissociation constants of soil acidoids, A (9) 314.
**Puri, A. N., and Hoon, R. C.** Electrodialysis of soils: III, Speed of electrodialysis of various cations, A (8) 291.
**Puri, A. N., and Sarup, A.** Soil humus: I, Estimate of soil humus by oxidation with alkaline permanganate, A (2) 83; II, Potentiometric study of formation of humic acid and humates, A (8) 290.
**Purinton, B. S.** Method and apparatus for molding covered ceramic receptacles, P (4) 148.
**Puttrell, J. W.** Blue John Mine, Castleton, A (10) 338.
**Pyrometric Instrument Co.** Pyro-optical pyrometer, A (3) 111; Surface and needle pyrometer, A (3) 111.

**Quarzlampen, Ges.** Vacuum-tight seals for current leads into quartz or refractory-glass vessels, P (2) 68.
**Quentin, A.** Process and apparatus for tempering glass sheets, P (1) 17; Tempering glass, P (1) 17.
**Quigley, T. F.** Abrading tool, P (2) 52; Honing and lapping machine, P (2) 52.
**Quirke, T. T.** Nepheline syenite, A (7) 262.

**R., D.** Course in glassmaking—summary, A (3) 103.
**Rabald, E.** Resistance of metals to attack by HCl, A (9) 311.
**Raber, R. R.** Abrasive wheel, P (2) 52.
**Rabezzana, H., McDougal, T. G., Ford, J. T., and Kirk, W. S.** Spark plug, P (1) 27.
**Ractliffe, G. H. C.** See London Brick Co., Ltd.
**Radczewski, O. E., and Schwiete, H. E.** Quantitative determination of clinker minerals with polarization microscope, A (9) 299.
**Rademacher.** Dust prevention in refractory industry, A (4) 165.
**Radiation, Ltd., Yates, H. J., and Bennett, A. R.** Means for measuring thickness of enamel and paint coatings on iron bodies, P (10) 325.
**Raf, S. Ya.** Maximum amount of cullet in glass batch, A (1) 13; Maximum grain size of sand for glassmelting, A (5) 179.
**Rafetto, H. C.** Treating raw clay materials, P (11) 361.
**Raisch, E., and Weyh, W.** Experimental and numerical determination of heat conductivity of hollow brick, A (9) 307.
**Raiskaya, I. M.** See Fedoseev, A. D.
**Rait, J. R.** See Hay, R.; McIntosh, A. B.
**Rait, J. R., and Hay, R.** Viscosity determination of slag systems, A (9) 311.
**Ralston, O. C.** Annual report of Nonmetals Division (fiscal 1937), B (2) 83; Froth flotation and agglomerate tabling of nonmetallic minerals, A (4) 150; see Fraas, F.; Hess, F. L.
**Ram, A., and Verman, L. C.** $As_2O_3$ as opacifying agent in Pb glasses, and manufacture of China glass in India, A (5) 176.
**Ramaswamy, K. L.** Refractive indices and dispersions of volatile compounds of F and B, A (4) 162.
**Ramb, R.** Spectrum-analytical investigations for industrial laboratories, A (4) 163.
**Ramsey, D. M., and Brier, R. K.** High-intensity magnetic separation of industrial minerals, A (3) 110.
**Ramseyer, C. F.** Mineral wool, P (6) 219.
**Randall, H.** Method of manufacturing grinding rings from emery and a medium of raw rubber, P (4) 128; Production of grinding rings and cylinders from emery and raw rubber, P (6) 209.
**Rane, M. B.** See Dube, V. S.
**Rankama, K.** See Eskola, R.
**Rankin, H. S., Laurence, R. A., Davis, F. A. W., Houston, E. C., and McMurray, L. L.** Concentration tests on Tenn. Valley barite, A (6) 230.
**Ranney, L.** Apparatus and method of boring into and treating earth material, P (10) 341.
**Rapp, P.** Effect of $CaCl_2$ on Portland cements and concretes, A (9) 298.
**Rasch, R.** Acceptance and possibility of utilization of fireclay brick, A (5) 185; Acceptance tests on refractories, A (11) 353; Errors in working up fire clay, A (9) 307.
**Raspe, F.** See Weise, P.
**Ratner, E. S.** See Gorbachev, N. V.
**Rau, A., Sommer, A., and Baur, H.** Manufacture of solid stable fuel, P (10) 337.
**Rau, C. C.** See Sweeney, J. A.
**Rauh, P.** Bonds for high-fired grinding disks, A (3) 91.
**Raule, C. T.** Two-slide automatic grinding machine, P (1) 4.
**Rayleigh.** Glass surfaces in optical contact, A (1) 12; Passage of He at ordinary

temperature through glasses, crystals, and organic materials, A (1) 44; Surface layer of polished silica and glass—optical contact, A (1) 14.
**Rayner, H.** Firestone as refractory, A (4) 143.
**Rayner, E. H.** Insulating materials, B (10) 333.
**Rayton, W. B.** Optical glass requirements of optical industry, A (11) 351; Physics in optical instrument manufacture, A (3) 111.
**Razorenov, A. S.** Methods of testing mechanical strength of silicate brick, A (6) 222.
**Rea, R. F.** Temperature-measuring cones, A (4) 152.
**Read, M. F.** Abrasive pad, P (3) 92.
**Redfern, S., and Patrick, W. A.** Distribution of solutes in silica gel, A (7) 264.
**Redinger, P., Jr.** Spark plug, P (8) 283.
**Redman, A. B.** Glass doorknob, P (2) 68.
**Redman, E. G.** Tumbler design, P (6) 211.
**Reed, C. E.** Colloidal properties of clay suspensions and gels, A (4) 156, A (6) 229, A (11) 365.
**Reek, A.** See Miller, W. J.
**Rees, W. J.** Developments in refractories industry, A (10) 330; see Booth, C.; Chadeyron, A. A.; Hartley, H.
**Reese, T. W.** Analyzing and controlling metal cleaning operations, A (8) 271.
**Reh, E. J.** Making lenses, P (6) 218.
**Reich, A.** Simple qualitative test for silicic and boric acids, A (3) 120.
**Reid, A.** See Evans, P.; Mitra, D. R.
**Reid, E. W.** Laminated glass, P (9) 305.
**Reid, W. T.** See Nicholls, P.
**Reidt, E.** See Stöhr, J.
**Reilly, A. F.** Enameled plaque, P (5) 176.
**Reimer, J. J., and Drummond, T. W.** Simple high-temperature gas burner, A (2) 79.
**Reimuller, C. L.** See Berry, E. G.
**Reinboldt, H., and Wisfeld, W.** Oxyhalides of Si, A (11) 366.
**Reinhold Schlegelmilch Porzellanfabrik.** Ornamenting ceramic articles, P (1) 5.
**Reinen, W.** Combined preparation and press equipment for occasional production of sand-lime brick, P (11) 353.
**Reingold, L.** Calculation of flame temperatures at constant pressure by ΔT method, A (11) 361.
**Reininger, H., and Jensch, H.** Synthetic molding sands: I; II, Standardized manufacture, A (4) 135–36.
**Reinke, F. C.** Heat-insulating wall, P (1) 18.
**Reinkober, O.** Tensile strength and elasticity of quartz fibers, A (4) 163.
**Reis, L. von.** Preparation and use of glass textile fabrics, A (5) 180.
**Reishauer-Werkzeuge A.-G.** Machine for grinding screw threads in chasers, P (4) 128.
**Reisner, H.** Glass in physics of building construction, A (5) 178.
**Reitz, M.** Manufacture of porcelain insulators, A (8) 283.
**Reitzel, J. A.** Steam-generating unit carries Morris Paper Mills load, A (7) 266.
**Remington, V. H.** Decorating glass: II, Silk screen process; III; IV, Miscellaneous methods, A (4) 129.
**Remington, W. J.** See Moyer, H. V.
**Rencker, E.** Dilatometric investigation of tempering and annealing glass of boron anhydride, A (4) 137; Tempering and reheating of boric anhydride glass, A (5) 181.
**Rendall, W. S.** Method and apparatus for proportioning and blending glass batch materials, P (3) 112.
**Renkert, O. W.** Paving brick, P (1) 18.
**Repky, H.** Producer gas *vs.* towns gas, A (3) 113.
**Reumann, O.** Use of Hagendorf feldspar in glaze for porcelain, A (8) 283.
**Rexer, E.** Luminescence of glasses, A (7) 248.
**Rexford, E. P.** See Thompson, C. L.
**Reynolds, D. H.** See Clark, G. L.
**Reynolds, D. L.** Demonstrations in petrogenesis from Kiloran Bay, Colonsay: I, Transfusion of quartz, A (1) 36.
**Ribaud, G.** Apparent specific heat—application to calculation of flame temperatures, A (3) 112; Speed of propagation of flame in homogeneous combustible mixture under constant pressure and theory of blue flame, A (6) 228.
**Rice, W. E.** See Nicholls, P.
**Richard, L. M.** Possible explanation for occurrence of rolled pebbles in clay and bauxite deposits, A (4) 157.
**Richards, C. H.** Grinding machine, P (8) 268.
**Richards, E. T.** Working of graphite crucibles, A (2) 75.
**Richards, T. C.** Magnetic dilatometer, A (2) 78.
**Richardson, E.** Refractory brick, P (1) 25, P (7) 255.
**Richardson, E. G.** Meter for clays and mineral dusts—applications, A (2) 78.
**Richardson, H. K., and Newcombe, F. A.** High-temperature controlling method, P (5) 194; Temperature control for molten streams, P (7) 251.
**Richardson, H. M.** See Clews, F. H.
**Richardson, R. E.** See Maass, O.
**Richardson, W. D.** Should downdraft periodic kiln be round or rectangular, A (7) 260.
**Richet, G.** Enamelers of the 19th and 20th Centuries, A (8) 271.
**Richheimer, I. D.** Locking cover for pots, P (3) 109.
**Richter, C.** Cooling glass articles (plates) by air, P (11) 352.
**Richter, E. F.** See Pfestorf, G.
**Richter, G. M. A.** Addition to collection of Greek and Roman art, A (9) 296; Cup by Tleson, A (9) 296.
**Richter, H.** See Kimble, H. K.
**Rickaby, H. C.** Geology of northern Ontario, A (10) 339.
**Rickenmann, A., and Kreis, E.** Means for dressing grinding disks, P (6) 209.
**Rideout, J. G.** Combinet design, P (2) 54.
**Ridgway, R. H.** Chromite, B (3) 106, B (9) 315; Chromite as chemical raw material, A (4) 156.
**Ridgway, R. R.** Boron carbide manufacture, P (9) 295; Electric-furnace structure for making abrasive metal carbides, P (9) 296.
**Ridgway, R. R., and Bailey, B. L.** Electric furnace, P (9) 311; Refractory article manufacture, P (1) 25.
**Ridler, K. E. W.** See Bowden, F. P.
**Ridvin, J. S.** Glass wool and yarn, A (3) 99.
**Rieke, R., and Mauve, L.** German kaolins for manufacturing porcelain: II, A (3) 109.
**Ries, H.** Economic geology, B (8) 290.
**Ries, M.** Maya and Peruvian ceramics, A (6) 210.
**Rigby, G. R.** See Clews, F. H.
**Rigby, G. R., and Clews, F. H.** Research work for clay industry, A (6) 238.
**Riggs, S. G., Jr.** See Greaves-Walker, A. F.
**Rimbach, R.** See Behar, M. F.
**Rishel, L. C.** Universal brake shoe grinder guide, P (3) 93.
**Rishkevich, E.** See Ryschkewitsch, E.
**Ritchie, P. D.** Spectrographic studies on ancient glass—Chinese glass from pre-Han to T'ang times, A (4) 139; see Farnsworth, M.
**Ritter, F.** Temperature measurement and regulation, A (2) 79.
**Rittgen, A.** Cost of electric firing of fine ware, A (11) 362.
**Rivertex Corp.** Adhesive and calking material, A (4) 165.
**Roberts, A. L.** Mechanical properties of refractory materials, A (3) 104.
**Roberts, A. L., and Cobb, J. W.** Behavior of refractory materials under torsion: III–A, Modification to apparatus; B, Ultimate strength of kaolin and kaolin-quartz mixtures, A (5) 186.
**Roberts, J. H., and Achauer, C. V.** Glass stopper and bottle grinding machine, P (1) 16.
**Roberts, J. H., Meredith, T. H., and Imperial Chemical Industries, Ltd.** Degreasing of metal articles, P (2) 59.
**Roberts, M. F.** American ornamental porcelain, A (7) 242; Unaker clay, A (7) 243.
**Robertson, J. B., Simson, F. W., and Strachan, A. S.** Chemical observations on silicosis, A (11) 367.
**Robertson, M.** Late geometric Attic amphora, A (4) 130.
**Robertson, T., and Haldane, D.** Economic geology of central coal field—area I, B (7) 263.
**Robie, N. P.** Abrasive product, P (5) 169; Coated abrasive article, P (11) 346.
**Robinson, H. G.** Abrasive cutting-off or severing machine and wheel, P (7) 241.
**Robinson, R. R.** See McKinley, J. M.
**Robson, H. A.** See Pearson, T. F.
**Robson, J. T., and Sylvester, G. R.** Kiln, P (7) 261.
**Robson, S.** Early development of chemical industry in Bristol, A (9) 297.
**Robson, W. D.** See Denny, J. J.
**Roche, J.** Balancing device for grinding or polishing wheels, P (1) 3.
**Rochow, W. F.** Refractories application, A (6) 222.
**Rochow, W. F., and McDowell, J. S.** Choosing refractories for superstructure and regenerators of glass tanks: I, Refractories and insulating materials; II, Refractories in glasshouse, A (11) 354.
**Rock, L. G. B.** Selection and testing of brick for railways, A (3) 103.
**Roder, C. F. L.** Automatic control of grinding and crushing mills, P (2) 79.
**Rodhain, P.** Possible modes of occurrence of gas in coal, A (6) 228.
**Rodin, S. V.** See Zhukovskiĭ, G. Yu.
**Rodman, C. J.** Manufacturing a tub, P (6) 214.
**Rodt, R. V.** Alumina and titania in clays, A (8) 280.
**Roe, H. A.** Functions of power scrapers and slackline cableway excavators, A (3) 110.
**Roeser, W. F., and Dahl, A. I.** Reference tables for Fe- and Cu-constantan thermocouples, A (6) 226.
**Roesner, G.** Use of industrial and waste gases (Lurgi processes), A (8) 287.
**Roessler, G.** Blank distribution and penetration factor, A (5) 176; Glass ductility and parison distribution, A (4) 137; Trouble shooting and penetration factor, A (5) 181.
**Roger, F. H.** Furnace roofs and arches, P (9) 308.
**Rogers, A. F.** Lapis lazuli from San Bernardino County, Calif., A (5) 196.
**Rogers, H. M.** Painted and stained glass from 16th Century to present, A (2) 54.
**Rogers, J. W.** See McKelvey, J. H.
**Rogers, W. S.** Soil moisture meter, A (6) 231.
**Röhm & Haas, A.-G.** Manufacture of clear transparent safety glass, P (11) 352.
**Rohrman, F. A.** Nonmetallics in chemical industry, A (4) 165.
**Rohstoffhandel der Vereinigten Stahlwerke, G.m.b.H., and Bettendorf, C.** Bauxites, P (11) 357.
**Roirant, E.** Blown glass article manufacturing machine, P (8) 277.
**Rolzen, A. I.** Hydraulic refractory bodies, A (6) 222.
**Rolff, F.** Compressed air for conveying and compressing foundry sands, A (1) 28.
**Rolfsen, O.** Cement production, P (5) 173.
**Roll, F.** Formation of grained surfaces on pressed glassware, A (6) 215; Rhythmic crystallization in slags, A (4) 162.
**Roller, P. S.** Classification of methods of mechanical analysis of particulate materials, A (4) 149; Law of size distribution and statistical description of particulate materials, A (11) 360.
**Roller, P. S., and Halwer, M.** Relative value of gypsum and anhydrite as additions to Portland cement, B (1) 6.
**Rollwagen, W.** Semiquantitative chemical spectral analysis in continuous and interrupted arc, A (6) 217.
**Rollwagen, W., and Schilz, E.** Spectrum analyses—use in investigating glasses and raw materials: (C) Electric arc in glass analysis, A (6) 217.
**Rolph, T. W.** Refractor, P (2) 68.
**Romankevich, I. P., and Slivko, V. E.** Refractory clays from Ol'gino, A (6) 231.
**Romanov, V. I., and Tzvetkov, N. A.** Evolution of gases from glass under influence of high-frequency discharge, A (2) 62.
**Romp, H. A.** Oil burning, B (3) 113.
**Romwalter, A.** Device to determine O content of air, A (5) 200.
**Ronci, V. L.** Forming glass-to-metal seals, P (10) 327.
**Roorbach, E.** Adobe houses in southern Calif., A (7) 252.
**Root, W. H.** Report of Subcommittee on Maintenance of Concrete Pavement Cracks and Expansion Joints, A (9) 299.
**Ropp, H. de.** See Burke, W. E.
**Ros, M.** Experiences, problems, and future developments of Swiss cement standards, A (10) 324.
**Rose, C. G.** See Boyer, J. A.
**Rose, J.** Building wall construction, P (11) 353.
**Rose, K., Firma.** Apparatus for molding hollow glassware, P (2) 67.

**Rosenberg, J. E.** Micrometer for enamel slips and glazes, A (6) 226.
**Rosenhauer, K., and Weidert, F.** Spectral absorption of Nd glasses, A (10) 326.
**Rosenkrans, R. R.** Stratigraphy of Ordovician bentonite beds in southwestern Va., A (3) 116.
**Rosenthal, A.** Manufacture of compound glass, etc., P (4) 141.
**Rosenthal, K.** See Vogel, R.
**Rosenthal-Isolatoren, G.m.b.H.** Cutting or dividing porcelain tubes, P (11) 359.
**Rosin, P.** Aërodynamics as basis of fuel practice, A (4) 153.
**Rosin, P., and Fehling, R.** Temperature-viscosity relationships of coal slags: II, Conclusions for firing techniques, A (5) 202.
**Roskill, O. W.** European and world zinc situation in 1936, A (1) 36.
**Ross, A. S.** See Monk, R. H.
**Ross, D.** Regenerative furnace refractories, A (5) 187.
**Ross, E.** Method and means for grinding and polishing sprocket teeth, P (11) 346.
**Ross, J. W.** Guide and deflector for glass charges, P (7) 250; Leer loader, P (1) 16.
**Ross, M. A. S.** See Beevers, C. A.
**Ross, W. F.** Special atmosphere furnace, A (4) 154.
**Rottenbach, E.** Density of pure potash feldspar constituent in microcline—chemical composition, A (1) 36.
**Rowden, E.** Effect of hydrocarbon gases on refractory materials: IV, Ethylene; V, Coal gas, A (2) 71.
**Rowden, E., and Green, A. T.** Effect of hydrocarbon gases on refractory materials: I, A (8) 280; Smoke emission in heavy clay industries, A (5) 196.
**Rowe, C. W. D.** See London Brick Co., Ltd.
**Rowley, F. B., and Algren, A. B.** Thermal conductivity of building materials, B (10) 329.
**Royak, S. M.** See Aksenov, V. I.
**Rubenstein, S., and Amazon, H.** Knife-grinding attachment, P (11) 346.
**Ruble, R. W.** See Bartlett, J. B.
**Rucken, F. F.** See Clark, G. L.
**Rudenko, G., and Hertsriken, S.** Determination of absorption coefficients of Li-Be-B glass "Hetan" in infra-red region, A (11) 349.
**Rudolf, N.** Importance of production statistics, A (7) 265.
**Rudow, H.** See Kühl, C.
**Rueckel, W. C.** Failure of coke-oven walls by reaction with coal ash, A (11) 354.
**Ruf, W.** Porous brick, A (11) 352.
**Ruheman, B.** Camera for low-temperature X-ray diffraction work, A (2) 77.
**Rühle, H.** See Wünsch, G.
**Rulla, N. V.** Viscosity of blast-furnace slags, A (6) 234.
**Rumbarger, J. C., and Schwendler, R. S.** Lining for ball mills, P (7) 259.
**Rumford Chemical Works.** Hydraulic gypsum cement material, P (4) 133.
**Rumler, R.** Electric furnaces in glass industry, A (6) 215.
**Rummel, K., and Kessler, F.** Simplified calculation of recuperators and regenerators, A (5) 189.
**Runfold Sand & Tile Co., Ltd., and Wilkinson, H. A.** Machine for mixing granular or pulverulent materials, P (2) 80.
**Runner, D. G.** Geology of glacial sand and gravel deposits, A (9) 313; Weathering of rocks, A (9) 315.
**Rupert, F. F.** See Meller, H. B.
**Ruschuk, G. M.** See Aksenov, V. I.
**Rusinov, L. I.** See Kurchatov, I. V.
**Rusk, E. M.** Apparatus for air flotation separation, P (2) 79.
**Rusoff, S.** Segmental grinding wheel, P (3) 93.
**Russell, R., Jr.** See Fessler, A. H.
**Russell, R., Jr., and Watts, A. S.** Auxiliary fluxes in combination with feldspars in earthenware body, A (4) 147.
**Russell, R. H.** Process for creating high temperatures, P (3) 114.
**Ruttenauer, A.** See Fritze, O.
**Ryan, L. W., and Cauwenberg, W. J.** Ti pigment composition, P (6) 236.
**Ryan, W. M., and Bold, J. W.** Automatic weighing and feeding machine, P (2) 79.
**Rybnikov, V. A., and Alimova, P. P.** High-grog refractories with mullite bond, A (11) 354; Vitrified brick with high grog content, A (11) 357.
**Rybnikov, V. A., Alimova, P. P., and Katyshev, P. I.** Refractories for glassmelting with high grog content from Druzhkovskil clays, A (1) 21.
**Ryde, J. W.** See General Electric Co., Ltd.
**Ryschkewitsch, E.** Methods to increase high temperatures, A (2) 72.

**S., G.** Clock glass grinding in all forms, A (8) 272; see also Schieb, G.
**Saboor, M. A.** See Das, S. R.
**Sachot.** Refractory, A (3) 105.
**Sächs. Glasfabrik August Walther & Söhne, A.-G., and Baruther Glashüttenwerke Alfred Kaiser.** Manufacture of patterned hollow glass articles from opal or colored crystal flash glass, P (11) 352.
**Saeger, G.** See Yaworski, N.
**Sage, B. H., and Lacey, W. N.** Phase equilibrium in hydrocarbon systems: XXI, Thermodynamic properties of isobutane, A (10) 337.
**Sage, B. H., Webster, D. C., and Lacey, W. N.** Phase equilibria in hydrocarbon systems: XIX, Thermodynamic properties of *n*-butane, A (5) 195; XX, Isobaric heat capacity of gaseous propane, *n*-butane, isobutane, and *n*-pentane, A (5) 195.
**St. Clair, H. W.** Sonic flocculator as fume settler—theory and practice, B (11) 365.
**Saito, S.** Preservation of ammonium molybdate reagent, A (6) 233.
**Sakier, G.** Goblet design, P (4) 131; Plate design, P (8) 271.
**Salaquarda, F.** Reactions of As in glass melts, A (2) 65.
**Salminen, A.** Concentration of $TiO_2$ in clays, A (6) 230.
**Salmon, W. H.** Scrap grinding wheels as foundry refractories, A (11) 346.
**Salomon-Calvi, W.** Formation of kaolin and silicification at Kutahya, A (1) 36.
**Sammt, A.** See Lengyel, B. v.
**Samoilov, V. F.** See Fedoseev, A. D.
**Sampson, A. M.** See Vincent, H. B.
**Samson, K.** Ceramic industrial material, A (3) 108.
**Samus, A. v.** See Gavrilov, V. V.
**Sanada, Y.** Investigations on celite: IV–VII, A (5) 173; Magnesia of Portland cement: III–VII, A (5) 173.
**Sancton, E. H., and Stewart, D. W.** Brick units for suspended roofs of furnaces, P (6) 223; Furnace brick, P (5) 189; Furnace-roof brick, P (5) 189.
**Sandell, E. B.** Determination of Cu, Zn, and Pb in silicate rocks, A (5) 199.
**Šandera, K.** See Barta, R.
**Sanders, G. P.** Simplified quinhydrone electrode—application in determining $p_H$ of liquids and semiplastic solids, A (10) 335.
**Sanderson, L.** Mg, the metal, A (8) 288.
**Sanderson, P. M.** See Briscoe, H. V. A.; Matthews, J. W.
**Sandin, D. A.** See De Marchi, A.
**Sandland, E. H.** See Webb, H. W.
**Sandorff, A. J.** Work-supporting roll for polishing machines, P (7) 242.
**Sanford, B.** Composite abrasive wheel, P (9) 295; Grinding wheel, P (1) 3.
**Sanjana, J.** Phenomena within plastic range of coals, A (10) 337.
**Santarelli, L.** See Sestini, Q.
**Sarapin, L. O.** See Vargin, V. V.
**Sarjant, R. J.** Fuel economy in melting and reheating furnaces, A (1) 33.
**Sarjant, R. J., and Middleham, T. H.** Heat-resisting steels for glass industry, A (8) 274.
**Sarnecki, K.** Historical notations on Polish nomenclature—clay to Al, A (9) 318.
**Sarup, A.** See Puri, A. N.
**Sasso, F.** See Malquori, G.
**Sasvári, K.** See Náray-Szabó, I.
**Satoh, S.** Heat of formation and specific heat of $Al_4C_3$, A (9) 316.
**Sauer, H.** Sedimentograph, A (8) 285.
**Sauereisen, C. F.** Building block and structure, P (10) 329.
**Sauer-Eisen Cements Co.** Acidproof cement is quick setting, A (1) 5.
**Sauermann, G.** Super-refractory materials, A (2) 74.
**Saunders, T. D.** Tumbler design, P (7) 244.
**Savage, F. K.** Alkaline cleaner and wetting agents, A (10) 324.
**Savchenko, P. S.** Phosphate method for determining Mg, A (2) 86.
**Savchenko, V. I.** See Azarov, K.-P.
**Sawai, I., and Inoue, S.** Specific gravity of $CaO$–$Na_2O$–$SiO_2$ glasses at high temperature: I, A (5) 181.
**Sawai, I., and Kubo, I.** Softening of glasses at high temperatures, A (8) 275; Two-phase glasses: I, Determining thermal properties of glass; II, Copper ruby glass, A (5) 181.
**Sawyer, C. B., and Kjellgren, B. R.** Newer developments in Be, A (8) 289.
**Sawyer, R. A.** See Vincent, H. B.
**Saxe, C. W.** Refractory, P (1) 25, P (8) 282.
**Saxton, R.** Acid cleaning of sheet steels, A (1) 7.
**Scaife, J. S.** See Lund, J., Ltd.
**Schaal, R. B.** Metallographic characteristics and enameling qualities of cast irons, A (2) 57.
**Schacht, E. C.** Method of coating and apparatus therefor and product, P (5) 170.
**Schaefer, A. O.** Grinding machine, P (10) 322; Tool grinder, P (10) 322.
**Schaefer, C., Bergmann, L., and Goehlich, H. J.** Determination of elastic constants of optical glasses from bending of light by supersonic vibrations, A (5) 177.
**Schaefer, Z.** Czechoslovak glassmelting sands, A (8) 288.
**Schaeffer, J. R.** See Storch, H. H.
**Schairer, J. F., and Bowen, N. L.** Pseudowollastonite and wollastonite solid solutions with diopside and akermanite, A (10) 340.
**Schaller, W. T.** Origin of kernite and borax in Kramer borate field, Calif., A (10) 340.
**Schanz, C.** Flask stopper for reagent bottles, P (10) 327.
**Schaphorst, W. F.** Diesel performance, A (5) 192.
**Scharfnagel, R.** Connection between ceramic bodies and metals, P (5) 204; Joining ceramic articles and metals, P (5) 191.
**Schauer, T.** Reactivity of lignite as means for obtaining ceramic raw materials poor in Fe, A (7) 262.
**Schavorostov, A.** See Tazitdinov, G.
**Scheepers, L.** See Batta, G.
**Scheidt, A. W.** See Howells, L. T.
**Schell, F. H.** Portable electric surfacing, A (8) 268.
**Schempf, J. M.** See Nichols, M. L.
**Schester, M. P.** Abrasives in cleansers and polishes, A (11) 345.
**Schieb, G.** Behavior of breaks in flat glass, A (8) 272; Boring holes in glass, A (1) 11; Effects of grinding and polishing on glass surfaces, A (9) 303; Glass building blocks—future of glazing, A (6) 215; Heat-resisting glass, A (1) 12; Italy—glass application, A (1) 12; Layout of a small mirror silvering shop, A (11) 351; Possibilities in glass-concrete constructions, A (1) 13; Universal apparatus for working glass, A (1) 15; see also S., G.
**Schiebold, E.** X-ray investigations of fine structure of glasses: I, Experimental results, A (5) 181.
**Schierholz, E.** Instrument for technical gas analysis, A (2) 78.
**Schiff, L. I.** Nucleus of the atom, A (3) 120.
**Schiller, G.** See Hedvall, J. A.
**Schilz, E.** See Rollwagen, W.
**Schimelbusch, M.** Sheet steel and fish-scales, A (4) 135.
**Schindler, K.** See Anselm, W.
**Schlaeffer, M. P.** Formation of NO during combustion of town gas in burners or combustion chambers, A (8) 287.
**Schlesinger, G. F.** Current research in brick as paving material, A (6) 219; Design of brick surfaces to obviate slipperiness, A (9) 306.
**Schlesische Spiegelglas - Manufactur C. Tielsch G.m.b.H.** Method and device for winding threads or filaments of glass, P (9) 306.
**Schlittermann, K.** Mineral resources of Greece, A (6) 230.
**Schloemer, A.** Structure of phosphorescent glasses, A (2) 65.
**Schlosinger, J.** See Aktien-Gesellschaft für Glasindustrie vorm. F. Siemens.
**Schmalz, C. H.** Apparatus for grinding, P (10) 322.
**Schmidt, E.** Heat conduction, convection, and radiation, A (2) 81.
**Schmidt, G.** Determining softening point of enamel, A (7) 245.
**Schmidt, H.** See Keppeler, G.
**Schmidt, R.** Collections of old glass and ceramic work in Würzburg, A (5) 171; Siliceous and aluminous raw materials, A (8) 275; Special glasses in lighting, A (1) 14.
**Schmidt, R. W.** Hard burning diatomaceous earth, P (1) 24.
**Schmidt, W., and Schulz, E. H.** X-ray in iron and steel research, A (11) 366.

**Schmidt, W. D.** Grinding machine, P (8) 268; Hone, P (6) 208.
**Schmidt & Co.** Means for degasifying clay in extrusion presses, P (6) 227.
**Schmitt, H. M.** Continuous control systems with variable characteristics, A (5) 192.
**Schmölzer, A.** Origin of weathering surfaces on building stones, A (1) 17.
**Schnabel, R.** Method for producing fireproof substances by improving raw materials by extremely high temperatures, A (5) 187.
**Schneekloth, W.** Gas heating and heat transfer in glassmelting tanks, A (2) 62; Temperature measurements on glassmelting furnaces: II, Control of pyrometric equipment, B (3) 101.
**Schneekloth, W., and Spielvogel, W.** Investigating glass currents in tank furnaces, A (8) 274.
**Schneider, J.** See Thilenius, R.
**Schneider, O.** Manufacturing abrasive articles, P (11) 346.
**Schnuerle, C.** Making glass dropping flasks, P (8) 278.
**Schoch, E. P., and McKnight, D., Jr.** Texas ceramic industry, A (8) 290.
**Schoeller, W. R.** Analytical chemistry of Ta and Nb, B (9) 317.
**Schoene, E.** Change of electrical resistance of Fe-Cr-Al heating elements up to 1300°C, A (1) 27.
**Schofield, H. Z.** Report of Research Bureau to 31st Annual Meeting of National Paving Brick Assn., A (6) 220; Research in brick and brick pavements, A (4) 142; see Duecker, W. W.
**Scholder, R.** Production of $Al_2O_3$ from bauxite, etc., P (9) 309; Treatment of bauxite, P (10) 332.
**Scholes, S. R.** American literature on glass since 1915, A (8) 272; Chemist at work: XIX, Chemist in glass industry, A (10) 326; Glass sands, A (5) 178.
**Scholze, W. H.** See Couchman, C. E.
**Schön, M.** See Lax, E.
**Schönborn, H.** Determining thermal endurance of glass (general methods), A (4) 137; Effect of heating liquid bath on thermal strength of glasses, A (2) 61, A (4) 137.
**Schondorff, E.** Glazing, engobing, and "smoking" of roof tile, A (5) 190.
**Schoonmaker, G. N.** Reconstruction with brick in Toledo, A (6) 220.
**Schori, F.** Apparatus for fusing and spraying pulverized substances, P (5) 175.
**Schossberger, F.** Precision powder camera for photographs at high temperatures and measuring instrument for X-ray diagrams, A (8) 285.
**Schott, G.** Glass as a substitute—experiences of a glass factory, A (5) 179; Heat-resistant glass, A (3) 99.
**Schrader, P.** Evolution of science and technique of glass, A (9) 303.
**Schreiner, E. J.** See Carpenter, L. A.
**Schrenk, H. H.** List of respiratory protective devices approved by U. S. Bureau of Mines, B (6) 227; see Brown, C. E.; Berger, L. B.; Foster, W. D.; Littlefield, J. B.
**Schröck, J.** Limits of accuracy in grinding of plane surfaces, A (2) 51.
**Schubert, H.** See Cruse, K.
**Schuen, M.** See Schuen, W.
**Schuen, W., and Schuen, M.** Physics of firing, A (1) 33.
**Schuenhoff, F.** Air in continuous kiln, A (8) 286.
**Schulthess, O., and Theiler, C.** Mixing and grinding mill, P (2) 80.
**Schulz, E. H.** See Schmidt, W.
**Schulz, H.** Glass industry and history, A (2) 63; Grinding and polishing glass, A (2) 63; Measurement of strain in opaque bodies, A (5) 200.
**Schulz, K.** Treatment of clay, P (6) 224.
**Schulze, A.** See Hoffmann, F.
**Schulze, H.** Protective coats for muffles and furnace walls in industrial furnaces, A (2) 81.
**Schulze, M.-T.** See Lehmann, H.
**Schumacher, W.** Refractory materials, P (5) 190.
**Schumann, T.** Producing a coating resembling terra sigillata on ceramic articles, P (11) 358.
**Schusterius, C.** Ceramic masses for electrical insulation, P (10) 333; Ceramic materials, P (8) 283; see Büssem, W.
**Schütte A.-G. für Tonindustrie.** Coating pottery, P (5) 172.
**Schutz, H. R.** Tumbler decorating machine, P (1) 17.
**Schütz, W.** Ternary compound $Mg_4Cu_{11}Al_{11}$, A (6) 234.
**Schwalbe, F. G.** How Ford makes glass: I–III, A (6) 216.
**Schwalbe, W. L., Badger, A. E., and Silverman, W. B.** Tensile tests of glasses, A (11) 351.
**Schwartz, G. M.** Alteration of spodumene to kaolinite in Etta Mine, A (1) 35; Calcic feldspar deposits of Minn., A (2) 82.
**Schwartzwalder, K.** Refractory body, P (9) 309; see Fessler, A. H.; McDougal, T. G.
**Schwarz, F.** Ceramic industry of West-Steirmark, A (5) 203; Talc refuse—talc cement, A (11) 347.
**Schwarz, M. v.** Comparisons of nondestructive material testing by X-ray shadow pictures and by magnetic testing, A (11) 365; X-ray densography, A (11) 366.
**Schwarz, R.** Chemical studies on clayey weathering and kaolinization, A (10) 338.
**Schwarz, R., and Trageser, G.** Artificial conversion of feldspars into pyrophyllite, A (2) 82.
**Schwedler, U.** Bright annealing in electric furnace, A (6) 212.
**Schweig, B.** Principles and methods of etching and embossing, A (9) 297.
**Schweitzer, H. V.** Apparatus for cleaning ceramic articles, P (5) 194.
**Schwendler, R. S.** See Rumbarger, J. C.
**Schwenke, V. G.** Applying abrading disks to grinding or polishing machines, P (11) 346.
**Schwiete, H. E.** See Radczewski, O. E.
**Schwindt, H.** See Wulff, P.
**Schwinner, R.** Deposits of crystalline magnesite and their distribution in eastern Alps, A (5) 196.
**Schwittmann, A.** See Jenckel, E.
**Scohy.** See Gilard, P.
**Scott, A.** Ball clays and uses, A (1) 35.
**Scott, H.** Glass-to-metal annealing process, P (5) 183.
**Scott-Paine, H.** Portable polishing machines, P (10) 322.
**Scribner, L. R.** See McCarty, C. N.
**Scripture, E. W., Jr.** Aluminous cements, P (2) 56.
**Scrivener, A.** Grinding machine, P (9) 296; Grinding machine and method of generating or correcting screw threads, P (1) 3.
**Scutt, A. G.** See Ball, A. L.
**Scutt, A. G., and Ball, A. L.** Abrasive wheel, P (7) 241.
**Searle, A. B.** Clay, A (9) 313; Selection of brick for blast furnaces, A (6) 222.
**Seaton, T. H.** Brick in railway engineering, A (3) 103.
**Secoy, W. M.** Machine and method of decorating ware, P (7) 259; Machine for stenciling ware, P (7) 259.
**Seddon, E.** All-glass apparatus for measuring density of glass by flotation, A (4) 148; Apparatus for examination of cords, inhomogeneities, and surface unevenness in glassware, A (9) 301; Constant temperature and humidity chamber for researches on properties of glasses, A (9) 302.
**Seiden, R.** Alumina from bauxite, A (2) 69.
**Seidler, O.** Operating results of enameling furnace, A (1) 9.
**Seigle, W. R.** Lightweight ceramic article, P (10) 329.
**Seil, G. E.** Making refractory brick, P (3) 107; Mullite refractory, P (6) 223; Refractory products, P (5) 190.
**Sekanina, J., and Wyart, J.** Harmotome, A (9) 313; Stilbite, A (9) 314.
**Seliger, H.** See Suchy, R.
**Selin, K. H.** Lawn mower grinder, P (7) 241.
**Selivanov, B. P., and Shpeizman, V. M.** Viscosity of slags in $SiO_2$–CaO–FeO system, A (11) 366.
**Seltz, H.** See Estep, T.
**Selyaev, I. A.** See Veselovskii, V. S.
**Sendlinger Optische Glaswerke G.m.b.H.** Manufacture of optical glass, P (8) 278; Optical glass, P (5) 183.
**Sengstaken, J. H.** Heat transfer—counterflow *vs.* parallel flow, A (7) 259.
**Seri Holding (Soc. Anon.).** Be compounds, P (10) 343.
**Sertschaninova.** See Zerchaninova, T. K.
**Servant, R.** Birefringence of quartz in far ultra-violet and Schumann region, A (1) 41; Examination and correction of quartz plates cut perpendicular to optical axis, A (4) 161.
**Sestini, Q.** Roman pozzuolana mortars, A (4) 133.
**Sestini, Q., and Santarelli, L.** Research upon pozzuolanas: I, Zeolitic nature; II, Flocculation; III, Behavior of mixed clay cements in excess $H_2O$, A (4) 132–33.
**Setterberg, I.** Porous refractory articles, P (7) 255.
**Sevastopoulo, A.** Linings in low-frequency induction furnaces, A (11) 354.
**Shallock, E. W.** Sintering system, P (2) 80.
**Shamsonova, B. M.** See Zhuravlev, V. F.
**Shapiro, A. D.** See Bendryshev, A. P.
**Shapiro, M.** Glass design, P (4) 131, P (7) 244.
**Shardlow, L. R.** Ceramic insulator, P (5) 191.
**Sharfshtein, A. I., and Kheifets, E. I.** Determining porosity of refractory materials, A (2) 70.
**Sharp, D. E.** Apparatus for feeding charges of molten glass, P (10) 327; Molten glass feeding apparatus, P (9) 306.
**Shaub, B. M.** Applications of natural-color photography in mineralogy, A (5) 192; Contemporaneous crystallization of beryl and albite *vs.* replacement, A (5) 196; Occurrence, crystal habit, and composition of uraninite from Ruggles Mine, near Grafton Center, N. H., A (10) 340.
**Shaver, W. W.** Glass article tempering method, P (6) 218; Glass tempering method, P (1) 16; see Lillie, H. R.; Littleton, J. T.
**Shaw, H.** Instruments for determining roughness of surfaces, P (10) 336.
**Shaw, J. D.** See Noel, D. O.
**Shaw, R. A.** Press accidents reduced by safety in die design, A (1) 30.
**Sheard, H.** Heat transmission through walls: II, A (10) 330.
**Sheen, R. T., and Kahler, H. L.** Determining S in oil—tetrahydroxyquinone as indicator in direct titration, A (10) 342.
**Sheen, R. T., and Noll, C. A.** Determining hardness in water by direct titration, A (4) 160.
**Sheffield Gauge Corp.** Method and machine for lapping a surface of revolution on a work piece, P (1) 4.
**Shelton, S. M.** See Harrison, W. N.
**Shenk, W. E., and Larsen, B. M.** Method and apparatus for determining temperatures of molten baths, P (11) 361.
**Shepard, G. M.** Brick in street reconstruction, St. Paul, Minn., A (6) 219.
**Shepherd, C. B., Hadlock, C., and Brewer, R. C.** Drying materials in trays—evaporation of surface moisture, A (8) 284.
**Sheppard, M.** Hydraulic stripping of stone quarry, A (4) 165; Primary crushing: Progress report No. 2, B (7) 258; Progress report No. 3, B (8) 286.
**Sheppard, M., and Witherow, C. N.** Primary crushing: Progress report No. 1, B (7) 258.
**Sherman, J.** See Taylor, N. W.
**Sherman, J., and Jeffries, W. J.** Spectrographic analysis of materials to determine conformity to specifications, A (6) 234.
**Sherman, R. A.** Temperature conditions in boiler furnaces, A (4) 145.
**Sherrard, J.** Chinese teapots, A (7) 242.
**Sherratt, G. G., and Griffiths, E.** Determining specific heat of gases at high temperatures by sound-velocity method: I, CO, A (8) 287; II, $CO_2$, A (7) 259.
**Sherts, J. H., and Dennison, B. J.** Making safety glass, P (4) 141.
**Sherwood, T. K.** Air drying of solids, A (10) 333.
**Shetelig, H., and Falk, H.** Scandinavian archeology, B (4) 130.
**Shibata, Z.** Quantitative determination of Se, A (6) 233.
**Shimer, J. A.** See Dorris, J. E.
**Shinkoskey, R. E.** See Yancey, H. F.
**Shiomi, S.** See Kamei, S.
**Shishakov, N. A.** Free two-dimensional crystals of $Si_2O_3$, A (5) 200; Investigation of structures of silica glass, pozzuolanas, and clays by electron diffraction, A (1) 43; Two-dimensional crystals of silica, A (11) 366.
**Shkotova, S. N.** Analysis of slags, A (1) 41.
**Shook, T. W.** Bricesco tunnel kilns, A (3) 112.
**Shorrock, R. T. L., and Marston Valley Brick Co., Ltd.** Repress brick molding machines, P (1) 32.

**Shorter, C. A., and Steele, H. L.** Manufacture of semiporcelain, A (4) 147.
**Shpeizman, V. M.** See Selivanov, B. P.
**Shuger, L. W.** Polishing composition, P (5) 170.
**Shumilin, A. A.** Hygroscopic properties of ceramic bodies, A (2) 89.
**Shumilin, A. A., and Paleev, I. I.** Drying processes and methods of drying refractory materials, A (1) 28.
**Shurley, F.** Machine for printing directly on metal or glass, P (5) 194; Nonoily vitreous enamel, P (3) 98.
**Shvetsov, V. N.** Colored spots in silica brick, A (1) 18; Semiacid grogless refractory for casting pipes, A (1) 22.
**Siddiqi, M. R.** Generalized equation of heat conduction, A (7) 264.
**Sidorenko, A. E.** Improving quality of spouts and plugs, A (1) 19; Talc of Zaporozhskii deposits, Ukraine, A (2) 83.
**Siede, B.** Etching effect of $LiNO_3$ on glass, A (5) 178.
**Siemens & Halske A.-G.** Applying layers of base metal upon ceramic bodies, P (2) 79; Coating ceramic articles with metals, P (8) 270; Industrial production of alumina powder, P (1) 24; Joining ceramic bodies to each other or to metallic bodies, P (2) 80; Uniting ceramic surfaces with each other or with metal surfaces by soldering, P (8) 294.
**Siemens-Schuckertwerke A.-G.** Continuous electric furnace for firing ceramic ware, P (2) 81; Tunnel furnaces, P (2) 81.
**Sigmont, W.** Tempering glass, P (11) 352.
**Silven, H. A.** Automatic grinding machine, P (7) 241; Valve-grinding machine, P (6) 209; see Flygare, C. G.
**Silven, H. A., and Flygare, C. G.** Automatic cam grinding machine, P (7) 241; Grinding machine work-clamping mechanism, P (6) 208.
**Silverman, A.** Alumina-silica relationship in glass, A (7) 246; Annual report on glass, A (7) 246; Developments in American glass manufacture: II, 1931 to 1938, A (10) 326; International chemistry meetings, A (10) 344.
**Silverman, W. B.** See Schwalbe, W. L.
**Simeon, F.** See Twyman, F.
**Simon, F.** Sheet abrasive material, P (1) 4.
**Simon, G.** Why so many kinds of electric resistance furnaces, A (5) 196.
**Simonds, H. R.** Metal cleaning and finishing, A (6) 213.
**Simons, J.** Enamel shop production problems, A (8) 271.
**Simonson, R. W.** See Truog, E.
**Simonton, W. R.** Stenciling apparatus, P (7) 259.
**Simpson, E. H.** See Krohn, J. M.
**Simpson, J.** Ba minerals, B (1) 40.
**Simpson, R. W.** Flower exhibiting device of glass, P (9) 298.
**Simpson, T., *et al.*** Discussion on "Alkaline casting slip: I," A (4) 146–47.
**Simson, F. W.** See Robertson, J. B.
**Sinay, B., and Mendelson, M.** Abrasive, P (7) 240.
**Singer, F.** Brick and tile coloring, A (5) 184; Ceramic industrial materials, B (2) 90; Refractory problems in iron and steel industry, A (11) 356.
**Singer, M., and Liebermann, E.** Manufacture of emery cloth and sandpaper, A (8) 267.
**Sirovy, G., and Czolgos, E. P.** Enamel chipping—relationship of ground-coat adherence to thickness and yield value of sheet steel, A (6) 213.
**Sismey, D.** Coal—suitability for glass-furnace heating, A (9) 312.
**Sittard, J.** Use of pressed dolomite brick in open-hearth furnace, A (8) 281.
**Skajaa, T.** Dust and gases separating apparatus, P (1) 31.
**Skaupy, F., and Weissenberg, G.** Preparing articles of vitreous silica by new methods, A (5) 180.
**Skellern, V.** Plate design, P (7) 244.
**Skellet, A. M.** Limitations of tubular ground-glass joints, A (3) 99.
**Skelley, L. D.** Modern fine glass, B (5) 181.
**Skinner, W. E.** (compiler). Mining yearbook, 1938, B (8) 290.
**Škola, V.** Methods for producing refractory $ZrO_2$ ware, A (11) 354.
**Skornyakov, M. M., Goralnik, A. S., and Evstrop'ev, K. S.** Influence of temperature on viscosity of glasses melted by "Lenzos" works, A (2) 63.
**Skvortzoff, A. A.** Bushing structure, P (10) 333.
**Sladkov, A. S.** Extraction of quartz from barite tailings of Salair concentrator, A (2) 82.
**Slayter, G.** Acoustical material, P (7) 249; Double glazing, P (1) 15; Making articles of vitreous material, P (8) 278; Sintering glass batch, P (7) 251.
**Sleigh, S. W.** Portable apparatus for precise gas analysis, A (9) 310.
**Slepian, J.** See Compton, K. T.
**Slick, E. E., Jr.** See Ilgenfritz, C. B.
**Silvko, V. E.** See Romankevich, I. P.
**Sloan, T. H.** Making hollow glassware, P (4) 141; Stenciling apparatus, P (6) 211.
**Slobodyanik, I. Ya., and Melenevskii, L. A.** Change of physical properties of lime-silica rock by Na silicate solutions, A (6) 219.
**Slocombe, F. E.** Apparatus for intermittent production of rolled glass plates, P (9) 305.
**Slonim, C.** Disintegration of bauxite by $Na_2SO_4$, A (2) 70.
**Slotsky, D.** Bifocal lens, P (11) 352.
**Slowter, E. E., and Gonser, B. W.** Gases for controlled atmospheres — requirements for purification, A (11) 362.
**Smalley, H. L.** Checkerwork, P (5) 189.
**Smekal, A.** Efficiency of mechanical crushing processes, A (11) 360; Influence of specimen width on breaking strength of sheet glass, A (4) 138; Mechanical strength properties of glasses, A (5) 179; see Berger, E.
**Smellie, J.** See Bryan, A. M.
**Smelting Metallurgische und Metallwerke A.-G.** Manufacture of ZnO (zinc-white pigments), P (6) 235.
**Smelyanskii, I. S., and Drazhnikova, L. V.** Addition of coarse-grained sand to silica-brick mixes, A (5) 185.
**Smelyanskii, I. S., Drazhnikova, L. V., and Gut, Ya.** Silica brick, A (7) 254.
**Smetana, V.** Geological conditions of diatomaceous earth deposits in Czechoslovak Republic, A (7) 261.
**Smirnov, V., and Aidinyan, N.** Determination of FeO in rocks and minerals, A (1) 42.
**Smith, A. J. G.** Vitreous enameling, A (6) 213.
**Smith, D. F.** Traveling stock rooms utilize space above working areas, A (2) 58.
**Smith, F.** Jar design, P (1) 5, P (4) 131, P (10) 323.
**Smith, F. E.** Deflocculation and controlled separation improve domestic china clay, A (4) 156.
**Smith, G., Jr.** Bottle design, P (9) 298, P (10) 323; Packer jar design, P (3) 94.
**Smith, G. A., and Van Dusen, M. S.** Building block, P (3) 107.
**Smith, G. F., and Getz, C. A.** Determination of Cr in chromite—procedure employing a mixture of phosphoric, sulfuric, and perchloric acids, A (5) 199.
**Smith, H. I.** Potash in Permian Salt Basin, A (10) 340.
**Smith, H. M.** New laboratories of Bureau of Mines Petroleum Expt. Station, A (10) 337.
**Smith, H. T. U.** Simplified graphic method of determining approximate axial angle from refractive indices of biaxial minerals, A (1) 44.
**Smith, J. C.** Apparatus for stenciling, P (10) 323; Method and apparatus for decorating spherical articles by a stenciling process, P (3) 94.
**Smith, K. E.** Laura Anne Fry—originator of atomizing process for applying underglaze color, A (11) 347; Origin, development, and present status of Newcomb Pottery, A (8) 269.
**Smith, M. A.** Automobile headlight lens design, P (3) 93; Glass casserole design, P (10) 323.
**Smith, M. C.** Ferrous alloys obtained by boride crystals A (10) 334; Hard-facing solutions, A (3) 110.
**Smith, M. L.** Measuring proportions of calcite and aragonite in precipitated chalk, A (9) 316; Nature of polish layer on metals, A (7) 240.
**Smith, N. G., and Smith, S. G.** Feldspar purification process, P (3) 117.
**Smith, P. H.** Grits for grinding, A (8) 267.
**Smith, R.** Mineral concentrator, P (11) 361.
**Smith, R. D.** Metallizing composition for glass, P (3) 102; Metallurgical needs of glass industry: I, A (1) 13.
**Smith, S. G.** See Smith, N. G.
**Smith, W. H.** Glazing and associated treatment of tile, P (6) 223.
**Snoek, J. L.** Magnetic and electrical properties of binary systems $MO \cdot Fe_2O_3$, A (3) 119.
**Snyder, H. H.** Glassworking machine, P (8) 277.
**Snyder, L. W.** Multifocal lens, P (1) 16.
**Società Anon. Vetreria Italiana Balzaretti Modigliani.** Apparatus for making glass filaments, P (11) 352.
**Società Elettrotecnica Chimica Italiana.** Enamel, P (10) 325.
**Société Anon. d'Études des Brevets et Procédés Coanda, Soc. Coanda.** Treatment of flue gases, P (10) 338.
**Société Anon. d'Études et de Constructions d'Appareils Mécaniques pour la Verrerie.** Automatic glassblowing and suction machine, P (9) 305.
**Société Anon. des Manufactures des Glaces & Produits Chimiques de St. Gobain, Chauny & Cirey.** Agitator for producing uniform mixtures of molten glass in furnace, P (8) 276; Apparatus for cooling glass for tempering, P (4) 140; Apparatus for drawing glass fibers, P (6) 217; Apparatus for fusing glass, P (11) 352; Apparatus for hardening glass, P (2) 67; Apparatus for making glass fibers by extrusion through fine orifices, P (11) 352; Apparatus for making glass sheets by drawing, P (6) 217; Apparatus for making multicellular glass, P (7) 249; Apparatus for making sheets of glass, P (5) 182, P (7) 249; Apparatus for making threads of glass, P (10) 327; Apparatus for molten glass, P (11) 352; Apparatus for producing bands or fibers of glass, P (5) 182; Apparatus for producing striated glass, P (2) 67; Electric furnace for melting glass, P (10) 327; Furnace for fusing and refining glass, P (6) 218; Glass, P (5) 182; Glass fibers, P (8) 277; Glass threads, P (6) 218; Glazed roofing, P (5) 183; Manufacture of glass threads, P (10) 328; Means for supporting large glass plates during thermal treatment, P (5) 183; Multicellular glass, P (5) 183; Process and apparatus for manufacturing glass sheets by drawing, P (4) 141; Process and device for conditioning glass in manufacture of articles with a tank furnace, P (1) 17; Process and means for grinding or polishing glass surfaces, P (1) 17; Regulating temperature of glass stream feeding sheet glass rolls, P (8) 278; Regulating temperature of rolling parts coming in contact with heated glass, P (10) 328; Silvering glass, P (3) 102; Tempering glass, P (1) 17, P (5) 184; Tempering sheets of glass, P (1) 17; Treatment of glass threads, P (10) 328; Zirconia, P (3) 121, P (4) 164.
**Société Anon. de Rectifications et d'Engrenages Procédés Minerva.** Profiling of grindstones, P (2) 52.
**Société Continentale d'Appareils Mécaniques pour la Verrerie Soc. Anon.** Glass furnace provided with gathering basins, P (8) 277.
**Société des fours industriels et métallurgiques.** Tunnel furnace for ceramic products, P (5) 196.
**Société Française des Verreries Mécaniques Champenoises.** Apparatus for distributing molten glass, P (11) 352.
**Société générale d'applications électrothermiques.** Electric fusion furnace, P (3) 112.
**Société générale du magnésium.** Mg oxychloride, P (3) 95.
**Société Genevoise d'Instruments de Physique.** Grinding or abrading machines, P (11) 346.
**Société de recherches et d'applications chimiques (Sorac) Soc. Anon.** Treating silicate ores, P 11) 367.
**Société des Usines Chimiques Rhône-Poulenc.** Safety glass, P (7) 251.
**Society of Chemical Industry.** Reports of progress of applied chemistry: Vol. 21 (1936), B (2) 90.
**Society of Glass Technology, Glass Standards Committee.** Proposed standard thermal-endurance test based on use of glass rods, A (4) 139.
**Socony-Vacuum Oil Co., Inc.** Lubricating oil for circulating systems of steam turbines, A (8) 284.
**Söderholm, G.** See Hägg, G.

**Sohlstrom, A. T.** Grinding wheel, P (3) 92.
**Sokolova, A. A.** See Bezborodov, M. A.
**Soler, G.** See Hare, W. A.
**Solf, K.** See Manegold, E.
**Sollazzo, V.** See Malquori, G.
**Solodovnikova, L. L.** Feldspar from pegmatites from North Kareliya, A (6) 230; see Kurbatov, S. M.
**Sommer, A.** See Rau, A.
**Sonntag, C. H.** Selecting proper refractory for hot-zone linings of kilns, A (5) 188.
**Sontag, O.** Preparation of point of separation in ampoules, P (10) 328.
**Sosey, L. K.** Consideration of copperheads, A (6) 212.
**Sosman, R. B.** Pyrometry and steel-maker's refractories, A (3) 111.
**Soubier, L. D.** Glassware forming machine, P (1) 16; Machine for decorating surfaces by stencil method, P (9) 312; Method and apparatus for producing hollow glass articles, P (1) 16; Method and apparatus for working glass, P (6) 219; Siphon head design, P (6) 211.
**Souczek, F.** Device for grinding and sharpening razor blades, P (10) 322.
**Soule, C. C.** Beanpot design, P (2) 54.
**Southhook Potteries, Ltd.** See Barbour, J. A.
**Spacu, P.** Gravimetric method for determining Ce present as cerous salt, A (3) 118.
**Spalding, S. C.** Purchase and inspection of tool steels, A (11) 360.
**Speakman, H. B.** Definite place in manufacturing taken by research, A (9) 318.
**Spear, R. D.** Evaporators—applications, A (7) 265.
**Speil, S.** See Norton, F. H.
**Speiser, E. A.** Finds at Tepe Gawra, A (1) 4.
**Spence, H. S.** Nepheline syenite from Ontario, A (11) 364.
**Spence, J. E.** Ashtray design, P (1) 5; Bowl design, P (1) 5; Dish design, P (2) 54; Drinking glass design, P (10) 323.
**Spencer, H. W., and Davis, L. S.** Muffle furnace, P (2) 81.
**Spencer, V.** See Yaworski, N.
**Spencer-Strong, G. H.** Examination of an unusual cast iron, A (3) 96; Factors influencing properties of acid-resisting enamels, A (2) 57.
**Spencer-Strong, G. H., and Stufft, P. C.** Behavior of enamels in contact with liquids at high temperatures and pressures, A (6) 212.
**Spicacci, A. R.** Grinding machine, P (8) 268.
**Spielvogel, W.** See Schneekloth, W.
**Spiers, E.** See Spiers, W.
**Spiers, T. A.** See Spiers, W.
**Spiers, W., Spiers, T. A., Spiers, E., and Ghaye, A.** Machine tool for grinding and cutting metal, P (5) 170.
**Spingler, K.** Defects due to drying, A (11) 359; see Kniel, W.
**Špirk, L.** Manufacture of nonbreakable and noncracking glass, A (8) 275.
**Spiroff, K.** Unusual occurrence of halite, A (4) 158.
**Sporn, P.** Windsor steam plant modernization, A (6) 238.
**Spraragen, W., and Claussen, G. E.** Shrinkage distortion in welding—review to Jan., 1937, A (1) 9; Shrinkage stresses in welding—review to Jan., 1937, A (5) 175; Welding chromium steels (up to 10% Cr)—review to July, 1937, A (10) 325.
**Springer, L.** Blistery glass, A (7) 246; Colorimetric method for determining small quantities (maximum 0.1%) of iron oxide in raw materials and glass, A (1) 41; Influence of thermal history of glass on composition and workability, A (1) 12; Yellow-green bottle glass from blast-furnace slag without pyrolusite, A (8) 276.
**Sproat, I. E.** Earthenware bodies, P (2) 77.
**Sproule, K.** Fundamentals of flotation, A (1) 28.
**Sprunk, G. C.** See Thiessen, R.
**Squires, L.** See Lewis, W. K.
**Stäblein, F.** Technical auxiliary devices for X-ray and gamma ray irradiation, A (10) 335.
**Stack, S. S.** Dew-point potentiometer for determining moisture content of gases, (4) 149.
**Stackelberg, M. v., and Chudoba, K.** Density and structure of zircon: II, A (8) 288.
**Staerker, A.** Vitreous china in field of sanitary ceramics, A (11) 357.
**Staes, J.** Properties and uses of Li, A (5) 197.
**Staff, Division of Industrial Minerals, Bureau of Mines, Canadian Dept. Mines and Resources.** Industrial minerals of Canada, 1937, A (10) 339.
**Staff of the Ore-Testing Section.** Ore-Testing Studies, 1936–1937—Special methods of analysis and testing and details of tests on various ores—Metallurgical Division progress report No. 22, B (9) 315.
**Stampe, G., Grosskopf, K., and Möllering, K. F.** Fine-dust filter, A (5) 203.
**Stand, T. A. R., Blomquist, U. O., and Albihn, H. F.** Walls for furnaces, P (6) 223.
**Standard Telephones & Cables, Ltd.** Glass-to-metal seals, P (2) 68, P (4) 140.
**Stanitz, J.** Making sinks, P (9) 301.
**Stanley, A. J.** Machine for grinding or sharpening knives, P (2) 52, P (10) 322.
**Stanley, G. H.** Sericite in banket, A (9) 314.
**Stansel, N. R.** Flash welding, P (2) 59.
**Stanworth, J. E.** Views on nature of glass, A (9) 305.
**Stanworth, J. E., and Turner, W. E. S.** Effect of small additions of alumina, sodium sulfate, and water on reactions in mixture $6SiO_2 + Na_2CO_3 + CaCO_3$, A (9) 302; Possibility of preparing glasses containing $P_2O_5$, $Al_2O_3$, $B_2O_3$, and $SiO_2$, A (9) 304.
**Stapleton, W. A.** Maintenance and repairs of grinding machinery, A (7) 258.
**Starik, I. E., and Gurevich, A. M.** Adsorption of Ra by glass, A (6) 214.
**Starns, C. H.** See Parker, J. L.
**Starostin, F. D.** Thermal tensions and graphic representation of firing, A (1) 44.
**Stavenow, A.** Glass trend, A (7) 247.
**Steatit-Magnesia A.-G.** Ceramic insulator, P (10) 333; Ceramic material, P (5) 191; Fusing together glass and ceramic bodies, P (2) 67; Giving ceramic material coating of metal, P (11) 361; Method of removing Fe from naturally occurring Mg silicates, P (6) 232; Production of ceramic materials, P (3) 123.
**Steele, H. L.** See Shorter, C. A.
**Steenis, O. L. v.** See Cath, P. G.
**Steever, A. M.** Grinding cracks, A (4) 127.
**Steger, W.** Expansion and shrinkage measurements on unfired ceramic bodies, A (11) 360; Measuring stress in ceramic bodies, A (8) 284; Stability and protection of ceramic material in construction of chemical equipment, A (5) 191.
**Stein, J. G., & Co., Ltd., and Biggs, H. C.** Apparatus for producing slip-cast ceramic bodies, P (6) 227.
**Stein, J. G., & Co., Ltd., and Hyslop, J. F.** Production of alumina from clay, etc., P (6) 223.
**Steiner, K.** Oil burners, B (3) 113.
**Steinlechner, M.** Impregnation and enameling of clayware, P (8) 294.
**Steinmayer, R. A.** Salt domes and their ceramic deposits, A (8) 289.
**Stelley, H. A.** Apparatus for washing and grading sand, P (3) 112.
**Stemmeler, F.** Spark plug, P (4) 148.
**Stepanenko, M. G.** Comparison of tank furnaces adapted for Fourcault plants, A (7) 247.
**Stephen, W. M.** Sixty-five mesh grinding in a closed circuit with stainless steel screens, A (8) 285.
**Stephens, R. E.** See Harrison, W. N.
**Stephenson, A.** Training of unskilled labor, A (7) 266.
**Stephenson, E., Jr.** Bathtubs annealed in huge atmosphere furnace, A (6) 212.
**Štěrba-Böhm, J. S., and Melichar, M.** Rare earths: II, A (2) 86.
**Stere, H. B.** See Derr, R. B.
**Sterner, W. A.** Glass tank refractories, A (9) 307.
**Steuer, N. F.** Bottle design, P (9) 298, P (11) 347; Jar design, P (2) 54, P (3) 94.
**Stevens, A. H.** Felted fibrous products such as batts or mats of mineral wool fibers, P (9) 305; Tool carriers for boring- and grinding-machine tools, P (5) 171.
**Stevens, B. A.** See Corrall, H.
**Stevens, E., and Stevens, E., Ltd.** Enameled sheet-metal heating and cooking vessels, P (5) 176.
**Stevens, E., Ltd.** See Stevens, E.
**Stevens, F. J.** Use of pyrophyllite as electrical insulator, A (10) 333.
**Stevens, H. D.** Buffing method and apparatus, P (4) 128.
**Stevens, L. J.** Strain insulator, P (1) 27.
**Stevens, R. E.** See Hess, F. L.; Miser, H. D.
**Stevenson, A. C.** Construction of direct daylight factor diagrams allowing for transmission losses through glass, A (4) 137.
**Stewart, A. H.** Coated glassware, P (8) 277.
**Stewart, D.** See Angus, T. C.
**Stewart, D., Jr.** Occurrence of detrital authigenic feldspar, A (4) 157.
**Stewart, D. W.** See Sancton, E. H.
**Stewart, H. E.** Beginnings of white tableware, A (4) 147.
**Stewart, O. J.** Frosted glass, P (6) 218.
**Stewart, W. C.** High-temperature properties for alloys of interest to the Navy, A (6) 225.
**Stewart, W. E.** See Fettke, C. R.
**Stiles, H.** Pottery of Ancients, B (9) 297.
**Stillwell, C. W.** Decalcomania transfer, P (7) 244.
**Stine, C. M. A.** Fundamental research, B (4) 166.
**Stine, E. L.** Vitreous or porcelain enameling, A (3) 97.
**Stobbe, H.** Pegmatites southwest of Custer, S. D., A (3) 116.
**Stockdale, S. W., Weaver, E. F., and Tinnes, S. P.** Manufacture of Pb borate, P (3) 121.
**Stodola, J.** Necessity of drying new kiln before firing, A (7) 260.
**Stoess, L.** Glassmakers' blowpipe, P (10) 328.
**Stöhr, J., and Reidt, E.** Alumina production, P (1) 24.
**Stoler, S. M.** Radiant tubes for vitreous enameling, A (1) 9.
**Stone, R. L.** See Greaves-Walker, A. F.
**Storch, H. H., Hirst, L. L., Golden, P. L., Pinkel, I. I., Boyer, R. L., Schaeffer, J. R., and Kallenberger, R. H.** Coal hydrogenation—U. S. Bureau of Mines experimental plant, A (5) 195.
**Stott, V. H.** Elastico-viscous properties of soda-lime-silica glass at temperatures near transformation point—criticism, A (9) 303; Means of increasing light transmitted by disappearing filament pyrometer of precision, A (4) 151.
**Stout, W.** Early American porcelain, A (6) 224; Mineral resources of Ohio, B (7) 263.
**Stowell, E. R.** Ceramic glazing composition, P (4) 167.
**Strachan, A. S.** See Robertson, J. B.
**Stradling, R. E.** Lime maximum in Portland cement, A (4) 132.
**Strafford, N.** Microanalytical methods, A (2) 85.
**Straka, V.** Cellular glass, P (11) 352.
**Straka, V., Weiner, B., and Kloubek, J.** Heat-insulating material, P (7) 250; Producing a heat-insulating material out of glass, P (9) 306.
**Strakele, H.** Magnesite mining and industry in Austria, A (10) 339.
**Stransky, H.** Decolorization of glass, A (8) 273; see Meyer, K.
**Strassburger, J. H.** Taps slag from six boiler furnaces every 24 hours, A (1) 22–23.
**Straumanis, M., and Cirulis, A.** Yellow $Cu_2O$, A (2) 87.
**Streat, A. J.** Tile, P (8) 279.
**Strelets, V. M.** Manufacturing lightweight refractories, A (1) 20.
**Strelkov, M.** Calculating raw-material mixture of Portland cement from two components, A (6) 211.
**Strickland, D. J.** Skip for handling brick stacks, P (1) 18.
**Stringer, L. C.** Severing and reuniting glass objects, P (7) 251.
**Ströble, W.** Effect of light filters (Nd-containing glasses) on seeing of colors, A (11) 350.
**Strock, L. W.** Spectrum analysis with carbon arc cathode layer (Glimmschicht), B (10) 341.
**Stroehlen, R.** Calculating heat absorption on irradiated cooled surfaces, A (3) 103.
**Strokov, F. N., Musyakov, V. A., Volkov, V. S., Itkina, E. Ya., Melamed, R. I., and Prokof'eva, R. V.** Alumina, P (7) 255.
**Strotzer, E.** See Hüttig, G. F.
**Stroud, R.** See Mess, J.
**Strunz, H.** Titanite and tilasite—relation of silicates to phosphates and arsenates, A (1) 39.
**Struthers, J. D.** See Ward, R.
**Stuart, A. T.** Manufacturing industrial gases by electricity, A (10) 336.

**Stuart, R. W.** See McIntyre, G. H.
**Stubbs, E.** Grinding machine for non-circular shapes, P (1) 3; Method and means for honing gears and for truing honing means, P (3) 93.
**Stüber, C.** Electric transport through phase boundaries: System I [glass–gas or vapor], (2) electrolytic introduction of H, N, and K into a glass diaphragm and electrolytic transfer of Na through the diaphragm, A (2) 61; see Manegold, E.
**Stuckert, L.** Opacity and solubility of coat enamels as function of grain size of opacifier, A (11) 349; Practice in enamel shop, A (4) 135; $SnO_2$ as opacifier in wet enamels, B (7) 246; see König, R.
**Stuckey, J. L.** Origin of kyanite, A (3) 116; Talc deposits of N. C., A (4) 158.
**Stuckey, J. L., and Davis, H. T.** Barite deposits in N. C., A (3) 115.
**Stufft, P. C.** Control in pickling room, A (4) 134; see Spencer-Strong, G. H.
**Stupakoff, S. H.** Spark plug, P (3) 109.
**Stutzer, O.** Rock wool, A (2) 65.
**Styskel, E. C.** Plate design, P (10) 323.
**Subarov, N.** Thermal insulating material from vermiculite, A (1) 23.
**Sub-Committee of Technical Committee III of the Deutsche Glastechnische Gesellschaft.** Glass grinding and cutting tools, A (2) 63.
**Sucetti, G., and Kohr, R. M.** Insulating structure comprising vermiculite, P (2) 90.
**Suchr, H. B.** Borate compound, P (1) 45.
**Suchy, R., and Seliger, H.** Production of Mg from magnesiferous raw materials by thermal reduction, P (3) 121.
**Sudoh, T.** See Koyanagi, K.
**Sulkovskaya, N. V.** Determining chemical resistance of optical glasses by optical methods, A (7) 247.
**Sulaiman, S. M.** Dual character of light, A (10) 342.
**Sullivan, A. P.** Gas analyzing apparatus, P (10) 336.
**Sullivan, E. C.** Accomplishments of industrial physicist in glass industry, A (7) 246; see Compton, K. T.
**Sullivan, J. D.** Fused refractory, P (6) 223, P (8) 281; Refractory trends and developments, 1936, A (4) 145; Refractory material, P (1) 25, P (8) 282; Uses, trends, and developments of refractories in U. S., A (6) 223; see Graham, R. P.
**Sullivan, W. J.** Method of brick hacking for unit handling, P (3) 103.
**Sumizawa, R.** See Kondo, S.
**Summers, A. V.** Portable electric cleaning and polishing tools, P (2) 52.
**Sundhauss, H. O.** Abrasive disk, P (10) 322.
**Sundius, N., Bygden, A., and Bruce, T.** Dust content of silicotic lung of earthenware worker, A (2) 88.
**Sunnen, J.** Machine for testing abrasive stones, P (1) 3.
**Surface Combustion Corp.** Adiabatic drying, A (10) 333.
**Sürü, J.** Vitreous state of glass, A (5) 181.
**Sustmann, H., and Lehnert, R.** Mineral constituents of coal—removal, A (11) 362.
**Sutcliffe, H., and Hearth, G.** Machine for surface treating brick in plastic state, P (2) 68.
**Sutherland, C. L.** Factors determining diagnosis of silicosis, A (11) 367.
**Sutherland, C. L., Meiklejohn, A., and Price, F. N. R.** Health hazard of workers exposed to alumina dust, A (5) 204.
**Sutton, H. M., and Jarman, G. W., Jr.** Electrostatic solid separations, A (10) 334.
**Sutton, T. C.** Apparatus for microanalysis of gases, A (8) 283.
**Suzuki, S.** See Kondo, S.
**Švarc, A.** Hollow brick, P (7) 252.
**Swallow, H. T. S.** Apparatus for determining porosity of firebrick by gas expansion, A (3) 103.
**Swallow, W.** Art in Pennsylvanian-German community, A (9) 296.
**Swank, H. A., and Mellon, M. G.** Calculator for obtaining tristimulus values from spectrophotometric data, A (3) 110.
**Swanson, F. A.** Blind end cylinder honing machine, P (5) 170.
**Swartz, C. K.** Classification of natural silicates: I–II, A (5) 196.
**Sweeney, J. A., and Rau, C. C.** Draft control for leers, P (7) 250.
**Swentzel, J. P.** See Baumann, H. N., Jr.
**Sweo, B. J.** See Judd, D. B.
**Sweo, B. J., and Bahnsen, M. J.** Stabilization of reflectance and color of recoat enamels, B (9) 301.
**Swinden, T., and Chesters, J. H.** Properties of open-hearth furnace checker brick, A (1) 21.
**Swings, P.** Possibilities of spectroscopy, A (5) 201.
**Switzer, G.** Veatchite, calcium borate from Lang, Calif., A (10) 341.
**Swoboda, H. O., Inc.** Electric furnace, A (1) 28.
**Sykes, W. E.** Cutter sharpening machine, P (5) 170.
**Sykes, W. P.** Carbon-free alloys hard as tool steel, A (4) 149; Cemented tungsten carbide alloys, A (11) 359.
**Sylvester, G. R.** See Robson, J. T.
**Symonds, R. W.** English looking-glass plates—manufacture, A (8) 273.
**Symons, H. H.** California mineral production, B (10) 341.
**Szelényi, T.** Be in bauxites, A (6) 229.
**Szigeti, P.** Negative adsorption and steam pressure isotherms in permutites and clays, B (3) 117.

**T., A.** Lamp chimney, A (2) 54.
**Tabakov, Z. Ya., and Belovodskii, V. V.** Heat-resistant magnesite, A (5) 186.
**Tabakov, Z. Ya., Belovodskii, V. V., Kortt, E. O., and Drazhnikova, A. V.** Production of magnesite brick by water-vapor treating method, A (8) 281.
**Tabakov, Z. Ya., Belovodskii, V. V., and Tazitdinov, G.** Magnesite brick resistant to spalling, A (2) 72.
**Tabata, K.** See Moriya, T.
**Tabata, K., and Moriya, T.** Thermal endurance of glass, A (4) 139.
**Tabata, K., Yokoyama, T., and Kobayashi, T.** Durability of soda-lime-magnesia glass, A (2) 60.
**Tagliabue, C. J., Mfg. Co.** Pyrometer, A (2) 79.
**Takamatsu, T.** Relationship between optical constants and structure of glass: IV–V, Three-component glasses, A (3) 100.
**Takashima, S.** See Wulff, P.
**Tamamushi, B.** Thixotropy of Japanese acid clay suspensions, A (4) 158.
**Tammann, G.** State of glass, A (3) 100.
**Tamura, M.** Thermostatical investigation of high-temperature drying, A (8) 285.
**Tanahashi, J.** See Kondo, S.
**Tapp, W. H.** Willems, china modeler, A (7) 243.
**Tarasov, P. P.** Improved illumination for microscopes, A (4) 150.
**Tarayan, V. M.** Potentiometric determination of silica in silicate rocks, A (9) 316.
**Tarpley, E. C.** See Abernethy, R. F.
**Tarr, W. A.** Trend of mineralogical research, A (4) 158.
**Tarr, W. A., and Keller, W. D.** Occurrences of kaolinite deposited from solution, A (4) 157.
**Tartakovskii, W. J.** Colorimetric determination of silica and phosphoric acid in aluminate solutions, A (1) 41; Colorimetric determination of silica in presence of F, A (1) 41.
**Tartaron, F. X.** Concentration of nonmetallic minerals, P (3) 117; Process of mineral concentration, P (10) 341.
**Tassick, J. A.** Glassmelting furnace, P (1) 16.
**Tate, F. R.** Froth-flotation concentration of minerals, P (2) 79.
**Taubin, G. B., and Pindrik, B. E.** Pyrophyllite as refractory material, A (2) 73; Quartzites from Ovruch deposits, A (1) 21.
**Taunton, J. B.** Saw-sharpening machines, P (1) 4.
**Taylor, D. F.** Making multifocal lens, P (1) 16.
**Taylor, E.** Device for honing razor blades, P (11) 346.
**Taylor, E. V.** Spark plug, P (6) 224.
**Taylor, H. R.** See Kreilick, L. W.
**Taylor, J. A., and Barrett, E. P.** Method for studying flow characteristics of glasses and slags at high temperatures—replies to discussion, A (7) 247.
**Taylor, J. R., Jr.** See Truog, E.
**Taylor, M. V.** Samian ware (terra sigillata), A (5) 171.
**Taylor, N. W.** Applications of potash in ceramic industry, B (3) 93; Law of annealing of glass—quantitative treatment and molecular interpretation, A (4) 138; Reply to criticism of "Elastico-viscous properties of soda-lime-silica glass at temperatures near the 'transformation point,'" A (9) 303; see Ellefson, B. S.; Henry, E. C.
**Taylor, N. W., McNamara, E. P., and Sherman, J.** Elastico-viscous properties of a soda-lime-silica glass at temperatures near "transformation point," A (8) 273.
**Taylor, W. C.** Report of progress on glass durability methods, A (1) 14.
**Tazitdinov, G.** See Tabakov, Z. Ya.
**Tazitdinov, G., and Schavorostov, A.** Tests with thermally stable brick of the Magnesite plant in crowns of Siemens-Martin furnaces, A (1) 23.
**Technical Committee IV of the Deutsche Glastechnische Gesellschaft.** Form and decoration—industrial applications, A (2) 62; Glass decoration, A (2) 63.
**Technova Patent und Neuheiten Export G.m.b.H. and Blum, H. J.** Apparatus for forming tensionless glass fibers, P (8) 276.
**Tennant, W. J.** Abrasive-coated disks, P (10) 322; Crystalline cast refractory articles, P (5) 189; Hardened vitreous article, P (5) 183; Lapping toothed gears, P (6) 208; Manufacture of sandpaper, P (1) 4; Production of $TiO_2$ pigments, P (6) 235.
**Tepohl, W.** Chemical resistance of glass and testing methods, A (6) 214.
**Terazaki, A.** Apatite china, A (3) 108.
**Tereschenko, G. K.** See Filintzev, G. P.
**Ter-Mikael'yants, E. I.** See Pines, B. Ya.
**Terrien, J.** Permeability of fused silica in extreme ultra-violet range, A (4) 162.
**Teslenko, E. F.** "Owep" apparatus for determining electrically the humidity of clays and ceramic bodies, A (1) 29.
**Tetrick, J. D.** Black specks in cover-coat enamels, A (1) 7.
**Theiler, C.** See Schulthess, O.
**Thévenet, S.** See Boutaric, A.
**Thiel, C.** Oven with continuous conveyer (enamel firing oven), P (10) 325.
**Thiemann, W. H. A.** Production of Na polysilicates, P (2) 88.
**Thierbach, G.** Tensile strength of plastically deformed glass rods, A (2) 66.
**Thierry, J.** Development of machinery in glass industry in 10 years—German patent literature, A (8) 273.
**Thiessen, R., Sprunk, G. C., and O'Donnell, H. J.** Preparation of thin sections of coal, B (11) 362.
**Thilenius, R., and Schneider, J.** Manufacturing grinding and polishing bodies, P (6) 208.
**Thilo, E.** Chemical studies of silicates: VI, Behavior of $MgSiO_3$ toward fused chlorides of bivalent metals; VII, Mg metasilicate formed in thermal decomposition of talc, A (6) 232.
**Thoenen, J. R.** Material handling equipment, A (4) 150; Mineral wool, B (6) 217.
**Thom, E. M.** Bibliography of North American geology (1935–1936), B (5) 198–99.
**Thomas, C. L., Egloff, G., and Morrell, J. C.** Thermodynamics in hydrocarbon research, A (5) 196.
**Thomas, C. W.** Electric heating of articles in tunnel kiln, P (9) 312.
**Thomas, M.** Behavior of glasses under treatment by blow-lamp flame, A (1) 10.
**Thomas, R. P.** See Bartlett, J. B.
**Thomas, W. J.** Chemical sand-washing plant, A (4) 156.
**Thomas, W. S.** Buffing wheel, P (2) 52.
**Thomaschek, R., and Deutschbein, O.** Disclosure of glass structure from fluorescence observations, A (9) 302.
**Thompson, A. P.** Monofrax refractories, A (5) 187.
**Thompson, C. L., and Rexford, E. P.** Study of alumina-silica checker brick from glass-tank regenerators, A (3) 105.
**Thompson, G. H.** Portable grinding machines, P (8) 268.
**Thompson, W. I.** See Lewis, W. K.
**Thorley, J. P.** Style in American dinnerware, A (4) 130.
**Thorngate, B. W.** Pottery development work in Mexico, A (5) 171.
**Thorpe, J. F., and Whiteley, M. A.** Thorpe's dictionary of applied chemistry: Vol. I, A–Bi, B (4) 164.
**Thorvaldson, T.** See Keevil, N. B.; Mather, D. T.
**Throssell, S. G.** See Goldsbrough, W.
**Thuile, J.** See Chrompet.
**Thuret, A.** Calculation of specific heats of vitreous silica and components of glasses as functions of temperature, A (8) 272;

Manufacture of glass blanks for spectacles, A (2) 64.
**Thürmer, A.** Manufacture of colorless enamel, glazes, and glass, P (9) 301.
**Thurnauer, H.** Cordierite gives low expansion in ceramic bodies, A (11) 358.
**Ticknor, W. A.** Flue structure, P (3) 107.
**Tilley, C. E.** Anthophyllite-cordierite granulites of Lizard, Cornwall, A (3) 114; Paragenesis of kyanite-eclogites, A (1) 39; Wollastonite solid solutions from Scawt Hill, County Antrim, A (1) 39.
**Tilley, C. E., and Vincent, H. C. G.** Paragenesis of kyanite-amphibolites, A (1) 38.
**Tillyer, E. D.** Ophthalmic lens, P (6) 219; Optics and glass industry, A (11) 351.
**Ting, V. K.** Science in China, A (3) 123.
**Tingwaldt, C.** See Moser, H.
**Tinnes, S. P.** See Stockdale, S. W.
**Tinsley, H., and Co.** Portable photoelectric daylight factor meter, A (10) 335.
**Tinsley, J. S.** Laminated glass, P (2) 68.
**Tipper, A.** Naturally bonded or synthetic molding sands, A (11) 348.
**Titov, N. V.** See Bogoroditskii, N. P.
**Titus, A. C.** Silica and silicate solubilities, A (6) 238.
**Titze, W. K.** Combined bowl and cover design, P (3) 94.
**Tkachenko, L. M., and Kostsov, N. S.** Petrographic study of clinker from cement mill in Kramatorsk, A (8) 271.
**Toensfeldt, K.** Circulation in boiler tubes, A (7) 265.
**Tolmachev, Yu. M., and Filippov, A. N.** Presence of Li, Rb, and Cs in basalts, granites, feldspars, and clay slates, A (7) 262.
**Tomlinson, W. H., and Meier, A. E.** Origin of montmorillonite, A (5) 197.
**Tommaselli, A.** Experiment station for glass, A (1) 12.
**Toney, E. F.** Double window construction, P (1) 15.
**Tongeren, H. van.** Air dust-removing apparatus, P (7) 259; Comparative observations on determination of silicic acid in soluble materials, A (5) 199; Gravimetric analysis—natural minerals and rocks, B (4) 164.
**Tonnochy, A. C.** Chessmen and chessboards, A (4) 128.
**Tontscheff, L.** Experimental glazes, A (11) 358; Floor tile manufacture, A (8) 282.
**Toropov, N. A., and Dyuko, T. M.** Effect of mineralizers on synthesis of aluminates and aluminoferrites of Ca, A (1) 6.
**Torrey, A. H.** Decorative glassware, A (7) 242; Modern trends in glass and china, A (7) 243.
**Toth, S. J.** Anion adsorption by soil colloids in relation to changes in free iron oxides, A (2) 81.
**Toulouse, J. H.** Bottle design, P (3) 94.
**Tourangeau, F. J., and Drinker, P.** Dust-filtering efficiency of human nose, A (6) 236.
**Townsend, J. R., and Abbott, L. E.** Applications of X-rays to industrial problems, A (1) 27.
**Trageser, G.** See Schwarz, R.
**Trainor, L. S.** Properties of mortar for unit masonry construction, A (1) 18.
**Trakhtenberg, A. M.** Comparison of methods for evaluating quality of silica brick, A (1) 18; Rapidly transforming quartzites, A (6) 222.
**Travers, A., and Zahabi, H.** Preparation of tricalcium aluminate hexahydrate, A (9) 298; Properties of tricalcium aluminate hexahydrate and anhydrous tricalcium aluminate, A (9) 298–99.
**Travis, P. M.** Preparation of colloidal mineral colors, A (2) 79.
**Travniček, M.** Cement phosphorescence, A (10) 323.
**Traylor Engineering and Mfg. Co.** Type TY reduction crushers, A (3) 111.
**Treiber, J.** Machine for grinding, honing, or polishing razor blades, P (1) 3.
**Tremblay, A. F.** Glass article shaping machine, P (7) 250; Glass manufacture, P (1) 15.
**Trendall, A. D.** Paestan pottery, B (10) 323.
**Trent, H. E., Co.** Electric furnaces, A (1) 28.
**Treufels, H. von.** Ceramic materials in high-tension technology, A (6) 223.
**Trever, C.** Terra cotta from Afrasiab, B (10) 323.
**Triggs, W. W.** Classification of solids in suspension, P (10) 336; Grinding or abrading machine, P (1) 3; Manufacture of laminated glass, P (5) 183; Means for keeping cutting speed constant in turning lathes when working diameter changes, P (2) 52.
**Trinks, W.** Electric heating elements for high temperatures, A (4) 153; Refractories insulation, A (1) 21.
**Triplett, T. A.** X-rays and gamma rays—industrial application, A (1) 45.
**Triplex Foundry, Ltd.** Mill room and practice, A (11) 348.
**Tripp, V.** Calyx drilling, A (1) 27.
**Trocknungs - Anlegen - G.m.b.H.** Drying equipment for liquid and pasty masses, A (7) 257.
**Trollip, A. S.** Grinding wheels, A (3) 92.
**Trost.** Cleaning and pickling sheet iron, A (2) 56.
**Trostel, L. J.** Refractories for steel industry, A (4) 144.
**Trott, K.** Continuous investigation of fibrous or fine-grained materials in through-flow chamber, A (7) 257.
**Trout, H. R.** Drinking fountain design, P (2) 54.
**Truman, N.** Medieval glass in Holme-by-Newark Church, Notts., A (7) 248.
**Truog, E.** See Barker, G. J.
**Truog, E., Taylor, J. R., Jr., Pearson, R. W., Weeks, M. E., and Simonson, R. W.** Procedure for special type of mechanical and mineralogical soil analysis, A (4) 157.
**Truog, E., Taylor, J. R., Jr., Simonson, R. W., and Weeks, M. E.** Mechanical and mineralogical subdivision of clay separate of soils, A (4) 157.
**Truscon Laboratories.** Tinted windows kill sun glare, A (4) 140.
**Tsigler, V. D.** Accelerated firing of silica brick from crystalline Ural quartzites in periodic furnaces, A (1) 18.
**Tsinberg, S. L.** Determination of MgO in acid-soluble slags, A (4) 161; Quantitative determination of Co by *o*-hydroxyquinoline, A (9) 316; Quantitative separation of Mn and Mg by *o*-hydroxyquinoline, A (9) 316.
**Tsynkina, V. M.** Properties of melted clays, A (1) 47.
**Tucan, F.** Mineralogy and chemistry of bauxite from Lika, A (3) 119.
**Tucker, J. L.** Glass fibers for textiles, A (9) 283.
**Tudorovskaya, N.** Singularities in variations of refractive indices of glass below 300°, A (2) 65.
**Tudor Safety Glass Co., Ltd., Pugh, C. T., and Ash, W.** Laminated or compounded safety glass, P (6) 218; Sealing laminated or compounded safety glass, P (6) 219.
**Turnbull, E. D.** White lead, P (7) 265.
**Turnbull, W.** Relationship of art to industry, A (6) 210.
**Turner, J. F.** See Pilkington, E. L.
**Turner, W. E. S.** Glass in modern life: IV, Scientific and heat-resisting purposes—British development (1916–1937), A (9) 303; Revolution in glassmaking, A (3) 100; see Holland, A. J.; Parkin, M.; Stanworth, J. E.
**Turner, W. L.** See Blackwell, H. A.
**Turrentine, J. W.** Potassium salts as chemical raw materials, A (10) 340.
**Twele, K. H.** Electric muffle furnaces for hardening steel, A (2) 78.
**Twelvetrees, R.** Road haulage for brickmakers: I, A (7) 258; II–III, A (10) 335.
**Twyman, F., Lothian, G. F., and Dreblow, E. S.** Quantitative spectrochemical analysis with microphotometer, A (9) 317.
**Twyman, F., and Simeon, F.** Refractive-index changes in optical glass due to chilling and tempering, A (1) 14.
**Twyning, V. J.** Container for polishing-wheel composition, P (9) 296.
**Tyler, P. M.** Marketing clay, B (7) 263; Marketing mica, B (7) 263; Mechanical preparation of nonmetallic minerals, A (4) 151; Minor nonmetals, $CO_2$, graphite, greensand, kyanite, Li minerals, meerschaum, mineral wool, monazite, olivine, Sr minerals, and vermiculite, B (3) 117, B (11) 365.
**Tyler, P. M., and Davis, A. E.** Magnesite and other Mg compounds, B (3) 106, B (9) 315.
**Tyler, P. M., and Metcalf, R. W.** Clays: kaolin (china clay and paper clay), ball clay, fire clay, bentonite, fuller's earth (bleaching clays), etc., B (3) 117, B (11) 364.
**Tyler, W. E., Douglas, T. B., Chamberlain, P. R., and Loveland, R. A.** Cement, P (2) 56.
**Tyrrell, G. W.** Apatite, nepheline, and rare-earth mining in Kola Peninsula, A (6) 229.
**Tyrrell, J. V.** Tiled roof building area, A (3) 107.
**Tzvetkov, N. A.** See Romanov, V. I.

**Ugai, K.** Plumbiferous overglaze colors: I–II, A (4) 148.
**Uhlitzsch, H.** Mixing molding sands, A (2) 57.
**Ullman, J. C.** Connecter for drain tile, P (7) 252.
**Ullrich, A. H.** Apparatus for separating in one operation hollow brick from a clay rod, etc., and for closing the brick, P (3) 103.
**Ulman, V.** Difficulties in drying, A (7) 257.
**Underwood, E. M.** Multiple use of pebble and ball mills, A (10) 335.
**Ungewiss, A.** See Büssem, W.
**Union Carbide & Carbon Research Laboratories, Inc.** Refractory composition, P (9) 309; Refractory materials, P (5) 190.
**Union des Verreries Mécaniques Belges (Soc. Anon.).** Drawing glass into sheets, P (8) 277; Drawing sheet glass, P (10) 327.
**United Glass Bottle Manufacturers, Ltd.** Apparatus for charging leers for cooling glassware, P (6) 217; Machines for molding glass, P (5) 183; Mechanical insertion of glass articles into annealing furnace, P (10) 328.
**United Glass Bottle Manufacturers, Ltd., and King, G.** Producing designs, patterns, or ornamental effects on molded ware, P (7) 251.
**United States Bureau of Mines.** Mineral physics studies—Metallurgical Division progress report No. 3, B (11) 365; Minerals yearbook, 1938, B (11) 365.
**United States Bureau of Mines, Foreign Minerals Division Staff.** Mineral raw materials, B (1) 40.
**Upper, F. A.** See Martin, H. C.
**Upton, A. M.** Manufacture of ridge tile, P (10) 332; Roofing tile, P (10) 332.
**Urban, F. O.** Psychrometric chart—construction and use, A (4) 152.
**Uspenskaya, E. A.** See Glasson, V. V.
**Utida, M.** Apparatus for testing bentonite or "imbibition bottle," A (4) 155; Nature and constitution of Yamagata bentonite: I, A (2) 83; III, Imbibing behavior of cylindrical pieces of bentonite—application to practical grading, A (4) 158.
**Utley, D.** Organic matter in Arkansas bauxite—origin and nature, A (5) 197.

**V., G.** Action of fuel-oil ash on refractory linings, A (8) 280.
**Vaerewyck, F. E.** See Devillers, R. W.
**Van Antwerp, A. C.** Building tile, P (5) 184.
**Van Brunt, G. A.** Better packing, less damage, A (11) 367.
**Vancil, E. D.** Machine for grinding laminated articles, P (8) 268.
**Van den Akker, J. A.** Chromaticity limitations of best physically realizable 3-filter photoelectric colorimeter, A (3) 110.
**Vanderbeek, H.** Grinding machine, P (5) 170.
**Vandermeer, B.** Luminous glass letter sign, P (7) 250.
**Van der Pyl, E.** Abrasive wheel, P (3) 92, P (10) 322; Abrasive wheel and mounting, P (11) 346.
**Van Deventer, F. M.** Flow of water and compressed air in pipes, A (8) 284.
**Van Dingenen, W.** See Van Itterbeek, A.
**Van Dusen, M. S.** See Smith, G. A.
**Van Embden, H. J. M.** Joints between metal and glass, A (3) 99; Telescope mirrors, A (11) 351.
**Van Horn, I. H.** Electric lamp, P (10) 327.
**Vanin, V. I.** See Bondarev, K. T.
**Van Itterbeek, A., and Van Dingenen, W.** Measurement on adsorption of O on glass at liquid O temperatures, A (1) 13.
**Varda, G. de.** Recovery of Ca phosphate, alumina, and K values from their insoluble minerals, P (3) 121.
**Vargin, V. V.** Volatilization of boric anhydride in glass, A (5) 181.
**Vargin, V. V., and Kefeli, A. A.** Processes in melting heavy baryta crown, A (2) 64.
**Vargin, V. V., and Kozhin, N. P.** Effect of various factors on color of copper ruby, A (5) 178.
**Vargin, V. V., and Sarapin, L. O.** Manu-

facture of colored glass of Schott GG-3 type for filtering light, A (6) 216.
**Varshavskil, A. N.** Effect of $Fe_2O_3$ on extraction of $Al_2O_3$ from sinter and effect of $Fe_2O_3$ sol on stability of aluminate solutions, A (2) 85.
**Vasenin, F. I.** Reciprocal action of CaO and $Cr_2O_3$ on heating: I, A (8) 291.
**Vasil'ev, K. A.** Determining $SiO_2$ in aluminate solution by rapid method, A (1) 43.
**Vasil'ev, K. A., and Faktorovich, B. A.** Rational analysis of aluminous frits obtained by lime and $Na_2CO_3$ process, A (1) 44.
**Vasil'ev, P. I.** Rationalization of analysis of silicate minerals and rocks, A (2) 86.
**Vassel, R.** Ceramic mass, P (3) 109.
**Vatan, A.** See Kraut, F.
**Vaughan, W. H.** See Henry, A. V.
**Vaughen, J. V.** See Lazier, W. A.
**Vaupel, O.** Technical auxiliary devices for X-ray and gamma-ray irradiation, A (10) 335.
**Vdovenko, V. M.** See Nikitin, B. A.
**Veitscher Magnesitwerke A.-G.** Refractory brick, P (11) 358.
**Vendl, M.** Recent data on bentonite of Tétény, A (5) 198.
**Venis, E.** Glassware finishing machinery especially for tableware, A (9) 304.
**Vepritskaya, V. F., and Gurevich, M. L.** Determination of alkalis in silicates, A (1) 42.
**Vereinigte Lausitzer Glaswerke A.-G.** Cooling furnace for glassware, P (2) 67; Forming necks on bottles, P (7) 250; Production of double-walled illuminating globes, P (7) 251.
**Verhoogen, J.** Thermodynamical calculation of solubility of important sulfides up to 400°C, A (7) 262.
**Verkaufsvereinigung für Teererzeugnisse, G.m.b.H.** Manufacture of ashless and gasless solid coke for production of electrodes, P (8) 286.
**Verman, L. C.** See Ram, A.
**Vermillion, W. O.** Mud mixer and equalizer, P (8) 294.
**Vernotte, P.** Measurement of thermal conductivity of insulating materials—"Touchau" (contact) method, A (6) 222.
**Verreries-Gobeleteries L'Espérance, Soc. Anon.** Apparatus for making hollow glassware with ornamented surface, P (1) 15.
**Versen, F.** Suggested standards for testing safety glass, A (4) 139.
**Verzocchi, G.** Italian firebrick industry, A (4) 143.
**Veselovskil, V. S., and Pertsov, V. N.** Mechanical properties of powders: II, Relationship of mechanical properties of clay to state of aggregation, A (4) 151.
**Veselovskil, V. S., and Selyaev, I. A.** Mechanical properties of powders: I, Influence of capillary pressure on drying of clay, A (4) 151.
**Vickers, A. E. J.** Effect of atmosphere on viscosity and surface tension of a simple glass, A (9) 302; see Franklin, R. G.
**Vickery, S. W.** Aspects of enameling in England, A (9) 299.
**Vié, A.** Slow setting cements, A (2) 55.
**Vié, G.** Origin and coloring of clays, A (5) 197.
**Vielhaber.** Acid-stable enamel, A (5) 173; Attack of water on enamels, A (5) 173; Attempts to determine hardness of enamel, A (11) 348; Blisters in weld seams, A (11) 348; Borax in enamel, A (11) 348; Calculation of coefficient of expansion of enamels, A (5) 173–74; Changes in cast iron on enameling, A (11) 348; Checking cast iron for enameling purposes, A (2) 56; Chemistry of silica, A (5) 174; Chilling enamel, A (5) 174; Coat glazes, A (5) 174; Composition of enamel batches, A (1) 8; Control of pickling bath, A (5) 174; Drying porcelain enamel, A (2) 57; Effect of boiling acids on enamels, A (5) 174; Enameling copper ware, A (5) 174; Enameling edges of ware, A (4) 134; Fishscales in black enamels, A (1) 8; Fishscaling in sheet-iron enamels, A (3) 96; Grain size of raw materials, A (5) 174; Gray spotted enamels, A (11) 348; Grinding enamel, A (5) 174; Mill additions containing oxides, A (5) 174; Quartz and feldspar in ground enamel, A (5) 174; Red and brown enamels, A (11) 349; Seventh meeting of German enamelers at Leipzig, A (3) 97; Simple determination of opacity, A (11) 349; Sorting enamel according to color tone, A (5) 175; Unusual enamel batches, A (5) 175; Utilization of waste enamel, A (4) 136; Zinc oxide, A (5) 175.
**Vieweg, H. F.** Apparatus and method for making mineral wool, P (5) 194.
**Vieweg, R.** (editor). Electrical insulation materials—development, manufacture, uses, B (4) 148.
**Vigneron, H.** Clays, A (2) 82; Technical applications of polarized light, A (2) 87.
**Vincent, H. B., Sawyer, R. A., and Sampson, A. M.** Spectrograph in iron foundry, A (8) 285.
**Vincent, W. J.** Spark plug, P (6) 224.
**Vinogradov, A. V.** Determination of MgO in limestone quickly and accurately, A (9) 315.
**Vinogradova, A. M.** See Belyankin, D. S.
**Viollet-le-Duc, E. E.** "Vitrail" (stained glass), A (7) 249.
**Vivell, A. E.** See Kouwenhoven, W. B.
**Vladimirov, L. P.** Calculating firing of dolomite in shaft furnaces, A (1) 18.
**Veano, V. G.** Attempts to determine chemical resistance of glass by method of radioactive indicators, A (2) 60; Change in Ensz method for analysis of gases occluded in bubbles in glass, A (2) 60.
**Vogel, F. W.** Finishing Shelvador cabinets in Crosley plant, A (6) 213.
**Vogel, O.** Installation for cleansing sheet iron, A (5) 174.
**Vogel, R., and Rosenthal, K.** System iron–cobalt–CoSi–FeSi, A (3) 97.
**Vogel-Jørgensen, M.** Cement manufacture, P (5) 173; Treatment of mineral slurry such as cement slurry, etc., P (9) 312.
**Vogman, D.** See Goncharov, V.
**Vogt, A.** Production of Mg from magnesium oxides, P (2) 88.
**Volk, G. W.** Nature of potash fixation in soils, A (9) 313.
**Volkov, V. S.** See Strokov, F. N.
**Volodin, P. L., and Babiev, E. I.** Ni and Cu plating of glass and porcelain, A (7) 243.
**Voogd, J. G. de.** Refractory mortars, A (2) 74.
**Voronin, D.** Soda ash in iron casting, A (6) 213.
**Voronin, I. I.** See Klyucharov, Ya. V.
**Vosburgh, W. C., Cooper, G., Clayton, W. J., and Pfann, H.** Gravimetric determination of zinc by mercuric thiocyanate method, A (10) 342.
**Vosch, J. M. J. C.** Corrugated glass sheets, P (1) 15.
**Vuilleumier, A.** Dressing apparatus, P (6) 208.
**Vuoristo, U.** See Eskola, P.

**Wacker, A., Ges. für Elektrochemische Industrie, G.m.b.H.** Regulator for controlling melting temperatures, P (9) 312.
**Wadeika, R.** See Duldner, K.
**Wadsworth, F. L. O.** Apparatus for fabricating glass articles, P (10) 327; Dual orifice feeder, P (5) 182; Method and apparatus for feeding molten glass, P (2) 68, P (3) 102, P (6) 219; Method and apparatus for severing molten glass, P (5) 183.
**Wadsworth, J.** Plate design, P (1) 5.
**Waeser, B.** Marathon steels, A (2) 78; Thermax steels, A (1) 31.
**Wagenfeld, W.** Artist in glass industry, A (8) 269; Artistic tasks in glass industry, A (2) 60; Evaluating glass art work, A (5) 171.
**Wagenseil, E. W.** Automatic combustion control for furnaces and boilers improved, A (1) 46.
**Wagner, H. W.** See Whitcomb, K. F.
**Wagner, W.** Glass silvering since 1930, A (8) 274.
**Wahlberg, O.** See Holmstrom, A. B.
**Wahle, O.** Testing etching baths in enamel manufacture, A (5) 175.
**Wainer, E.** See Kinzie, C. J.
**Wainford, R. H.** Feldspar production in Maine, A (3) 115.
**Wakabayashi, A.** See Kondo, S.
**Wakabayashi, S.** Nozzles and stoppers used in steel works, A (3) 104.
**Waldron, F. B.** See Pilkington Bros., Ltd.
**Walker, A. W.** Abrasive device, P (7) 241; Grinding device, P (5) 170.
**Walker, J.** Refractories for enameling furnaces, A (7) 254.
**Walker, J. H.** Air conditioning influences building design, A (2) 75.
**Walker, R. H.** Insulator, P (3) 109.
**Walker, T. R.** Classification of foundry sands, A (11) 348.
**Walker, W. H., Lewis, W. K., McAdams, W. H., and Gilliland, E. R.** Principles of chemical engineering, B (9) 319.
**Walker-Turner Co., Inc.** Bench grinding machines and work piece supporting means therefor, P (11) 346.
**Waller, R. J.** Methods for determining thermal endurance of glass, A (9) 304.
**Walling, C. E.** Circular relief grinder, P (7) 241.
**Wallquist, G., Lindberg, R., and Walter, F. W. von.** Important factors in pickling steel, A (11) 348.
**Walsh, J. F.** Laminated glass, P (1) 16.
**Walter, F. W. von.** See Wallquist, G.
**Walter, K.** Grinding and polishing as surface treatment, A (8) 267.
**Walters, F. M., Jr.** See Ackley, R. A.
**Wampler, R. W.** See Watkins, G. B.
**Wang, H.-H.** See Hohorst, G.
**Ward, C. J.** High alumina refractories, A (9) 307.
**Ward, E. C.** High-vacuum gas-analysis apparatus, A (10) 334.
**Ward, R., and Struthers, J. D.** Reactions in solid state: I, Reactions between $BaCO_3$ and $Fe_2O_3$ in presence of O, A (10) 342.
**Warga, M. E.** See Hicks, V.
**Waring, C. E.** See Harris, P. M.
**Warner, A. L.** Grinding machine, P (3) 92.
**Warner, K. G.** See Johnson, B. L.
**Warner, W. E.** Coating polishing wheels with abrasive, A (3) 91.
**Warren, B. E.** X-ray determination of structure of liquids and glass, A (2) 87; see Biscoe, J.
**Warren, B. E., and Biscoe, J.** Fourier analysis of X-ray patterns of soda-silica glass, A (8) 273; Structure of silica glass by X-ray diffraction studies, A (3) 101.
**Warren, J. W.** Building unit and wall, P (4) 142.
**Warren Axe and Tool Co.** Applying high finish to axe blades, A (10) 321.
**Warte, F.** Manufacture of optical glass at Askania Works, A (7) 248.
**Wartenberg, H. von.** High-temperature ceramics, A (2) 71; Strength of unfired ceramic bodies, A (8) 293.
**Wartman, F. S.** Construction and operation of magnetic balance, B (11) 365.
**Warwood, W. E.** Gas-producing and smoke-consuming fire box and downdraft kiln, P (3) 114.
**Washo, W.** Means for casting clay pipe, P (5) 194.
**Watkins, G. B., and Wampler, R. W.** Laminated safety glass, P (3) 102.
**Watson, H. H.** System for obtaining, from mine air, dust samples for physical, chemical, and petrological examination, A (2) 89.
**Watson, K. M.** See Hougen, O. A.
**Watt, J. B.** Apparatus for drawing sheet glass, P (5) 182.
**Watts, A. S.** Proposed modifications of classification of ceramic dinnerware, A (9) 309; see Russell, R., Jr.; Zimmer, W. A.
**Waugh, J. G.** Approximate specific-gravity determination, A (10) 333.
**Waugh, S.** Art of glassmaking, B (9) 305.
**Waugh, T.** See Canfield, R. W.
**Waugh, T., Jr.** Apparatus for forming hollow glass articles, P (1) 15.
**Weaver, E. F.** See Stockdale, S. W.
**Weaver, K. S.** Calculation of filters for color-temperature conversion, A (2) 60.
**Webb, H. W.** Alkaline casting slip: I, A (4) 146.
**Webb, H. W., and Brough, J. E.** Use of casting scrap in alkaline slip, A (4) 147.
**Webb, H. W., Johnson, S. B., and Brough, J. E.** Casting rate of slip and tensile strength of cast, A (4) 147.
**Webb, H. W., and Lockett, R.** Protective colloids in bone-china slips, A (4) 147.
**Webb, H. W., and Sandland, E. H.** Effect of $SiO_2/Na_2O$ ratio in silicates on fluidity of slip, A (4) 147.
**Webb, R. W.** See Murdoch, J.
**Webber, H. A.** See McMillen, E. L.
**Webb's Crystal Glass Co., Ltd., Johnston, R. W., and Northwood, J. H.** Production of hollow glass units, P (1) 17.
**Weber, H. C., and Jacobson, R. D.** Estimation of B by modified flame test, A (10) 342.
**Weber, M., Jr., and Moran, R. F.** Precise method for sieving analysis, A (10) 335.
**Webster, D. C.** See Sage, B. H.
**Webster, D. E.** Abrasive article and cement, P (8) 268; Cutting-off wheel, P (9) 296.
**Weckerle, F.** Glass as industrial replacement material—suggestions of Technical Committee of hollow glass industry, A (5) 178.

**Weed, W. A.** Grinding device, P (4) 128; Grinding machine, P (11) 346.
**Weeks, M. E.** See Truog, E.
**Wehrli, S.** See Mezener, B.
**Weibke, F.** See Biltz, W.
**Weichelt, F.** Winning ceramic clays by blasting, A (1) 47.
**Weidert, F.** See Rosenhauer, K.
**Weidert, F., and Löffler, H.** Protective glass, P (7) 251.
**Weiller, P. G.** Accurate timing has increased scope of spot welding, A (1) 7.
**Weiner, B.** See Kloubek, J.; Straka, V.
**Weinig, A. J., and Carpenter, C. B.** Trend of flotation, B (8) 286.
**Weinland, C. E.** Celite type high-temperature thermal conductivity apparatus, A (4) 149.
**Weis, J. H.** Ceramic raw material, P (1) 27; Producing kyanite, P (1) 24; Syenite processing, P (3) 118; see Peddrick, C. H., Jr.
**Weise, P., and Raspe, F.** Preparation of titanium oxygen compounds, P (9) 317.
**Weishampel, R. C.** Drill grinding machine, P (1) 3.
**Weissenberg, G.** See Skaupy, F.
**Weissmann, L.** Use of native clays and SiC in production of zinc muffles, A (6) 223.
**Weitendorf, K. F.** See Jander, W.
**Weitzer, H.** Effect of thermal insulation of arc furnaces on current consumption, A (5) 195.
**Welch, R.** Germany's pottery industry (1934), A (3) 109.
**Welhart, C.** Glass container, P (5) 182.
**Wells, F. O.** Grinding machine, P (10) 322.
**Wells, J. M.** Wells, pioneer potter, A (2) 89.
**Wells, L. S.** See Newman, E. S.
**Welsch, H.** See Wolf, H.
**Welser, H.** Ore range of Karamazar in western Turkestan, A (5) 197.
**Welte, H.** Cadmium pigments in ceramic industries, A (4) 160.
**Welter, G.** Corrosion by impact of falling drops, A (9) 310.
**Welzel, G.** Vacuum presses in heavy-clay industry, A (3) 111.
**Wempe, B.** Metal or glass plates with small holes, P (8) 278.
**Wendelkin, W.** Power distribution for wiring enameling plant, A (9) 300.
**Wenham, E.** Silver-mounted porcelain and pottery, A (8) 270.
**Wens, C.** See Endell, K.
**Werner, R.** See Mueller-Cunradi, M.
**Wernicke, F. W. O., and Muller, B. R.** Device for making bifocal glasses, P (5) 182.
**Werring, W. W.** Micrometer ratchet, A (4) 151.
**Wesp, G.** Plate design, P (1) 5.
**West, B.** Modern equipment facilitates enameling at United Stove Co., A (6) 213.
**Westbrook, L. R.** See Lawrence, R. E.
**Westfalia-Dinnendahl-Gröppel A.-G.** Centrifugal apparatus for separating dust from gases, P (6) 227.
**Westinghouse Electric & Mfg. Co.** Color matching booth to eliminate shadows, A (10) 324; Metal-to-glass seals, P (3) 102.
**Weygandt, A. S.** Sodium silicate adhesives, P (5) 203.
**Weyh, W.** See Raisch, E.
**Weyl, W.** Development of optical glasses—Otto Schott, A (5) 177; Fluorescence of glasses, A (10) 326; see Büssem, W.; Kühl, C.
**Whillock, R. H.** See Bastow, S. H.
**Whitacre, D. D.** Building construction, P (2) 68.
**Whitacre, M. L.** Manufacture of bonded articles, P (6) 208.
**Whitacre, M. L., and Leeuw, P. de.** Manufacture of porous bodies, P (3) 123.
**Whitaker, H.** Sandblasting applied to vitreous enameling, A (10) 325.
**Whitcomb, K. F., and Wagner, H. W.** Grinding wheel, P (2) 52.
**White, C. E., and Parent, P. A.** Process of separating Be compounds from Al compounds, P (5) 203.
**White, F. P.** Weatherproof masonry joint, P (5) 191.
**White, G.** Glass-tempering apparatus, P (4) 140.
**White, G. E.** See Hixson, A. W.
**White, H. E.** Conversion tables for thermal units—use of thermal ohm as unit of thermal resistance, A (3) 118; Electrically fused magnesia, A (7) 253; Refractory articles, P (3) 107.
**White, J.** Adhesion of enamels to iron, A (11) 347; see Hay, R.
**White, J. F.** Buffing wheel, P (3) 92.
**White, N. W.** See Allen, L.
**Whitehead, F. W., and Goodby, W. T.** Manufacture of cylindrical objects, P (8) 268.
**Whitehead, J. B.** Recent progress in insulation research, A (4) 152.
**Whitehouse, A. G. R.** Excretion of silica in urine after oral administration of silica and silicate dusts and their solubility in acid and alkaline solutions at 37°C, A (7) 265.
**Whitehouse, D.** Machine for roughening brick, P (4) 142.
**Whitehouse, D., and Marston Valley Brick Co., Ltd.** Brick-roughening machine, P (1) 18; Machine for roughening brick, P (4) 142; Method and apparatus for coloring brick, P (6) 223.
**Whiteley, M. A.** See Thorpe, J. F.
**Whitenack, C. L.** See Drill, D. C.
**Whitlatch, G. I.** Ceramic resources of Tenn., A (9) 313.
**Whitmarsh, J. H.** Ventilating building block, P (7) 252.
**Whitmer, V. W.** Welding stainless steel, A (3) 98.
**Whitt, D. M., and Baver, L. D.** Particle size in relation to base exchange and hydration properties of Putnam clay, A (5) 197.
**Whittaker *et al.*** Airless shot-blasting, A (10) 333.
**Whittemore, J. W.** Report of Committee on Standards, A (5) 204.
**Whittemore, J. W., and Obenshell, C. R.** Ceramic, P (7) 266.
**Whittle, W. H.** Vitreous enameling industry and Inst. of Vitreous Enamelers, A (10) 325; see Kent, B. B.
**Wickersham, F. A.** Abrasion resistance of low-alloy steel (medium Mn), A (4) 127.
**Wicklein, R. R.** Crucible, P (2) 75.
**Wiedbrauck, E.** See Fulda, W.
**Wiegand, K.** Application of glass to piping installations of small diameter and hot-water heaters, A (5) 176.
**Wienerberger Ziegelfabriks- und Bauges and Kriege, E.** Means for de-airing clay in extrusion presses, P (10) 336.
**Wienert, F.** Magnesium oxychloride production, P (5) 173.
**Wiessner, P.** Abrading machines at Leipzig Spring Fair (1937), A (3) 91; Grinding machines at Leipzig Spring Fair, A (10) 321.
**Wilhelm, D. M.** Treatment of filter-press plates by painting, enameling, metallizing, and galvanizing, A (4) 153.
**Wilke, W.** Progress of German electric furnace industry (symposium)—electric arc furnaces, A (11) 362.
**Wilkie, L. A.** Apparatus for filing or abrading, P (11) 346; Hand machine tools for filing purposes, P (8) 268.
**Wilkinson, C. K.** Iranian expedition (1936)—Nishapur, A (9) 297.
**Wilkinson, H. A.** See Runfold Sand & Tile Co., Ltd.
**Wilkinson, W. D., Jr.** Columbium in steels—plain Cr and Cr-Ni, A (4) 149; Grinding and finishing stainless steels, A (3) 91.
**Willetts, P. G.** Method and apparatus for making glass, P (8) 278.
**Williams, C. A.** Bottle design, P (8) 271.
**Williams, C. H.** See Hill, H. S.
**Williams, C. L.** Push-and-pull fume removal, A (11) 349.
**Williams, C. R.** Petrographic method of dust analysis, A (6) 237.
**Williams, H. B.** See Howells, L. T.
**Williams, R. C.** See Bone, H. M.
**Williams, S. R.** Early scratch hardness methods, A (1) 1; Wear resistance in relation to hardness, A (1) 2.
**Williams, W. E.** Construction of optical lenses and mirrors, P (2) 67.
**Williamson, W. O.** Darkening of commercial $TiO_2$ in daylight, A (1) 42; Geology of British pottery materials, A (7) 261.
**Willis, C. L.** See Willis, J. M.
**Willis, J. M., and Willis, C. L.** Apparatus for de-airing clay, P (7) 259.
**Willis, U. G.** Crankshaft grinder, P (11) 346.
**Willman, C. D.** Discussion of base-course design, A (6) 219.
**Willson Products, Inc.** Dust counter, A (4) 150; Willson products for industrial safety, B (7) 258.
**Wilman, H.** See Finch, G. I.
**Wilson, H.** See Monarch Tool Co., Ltd.
**Wilson, J. D.** Paving brick in stadium construction, A (6) 220.
**Wilson, J. H.** Plate design, P (1) 5.
**Wilson, J. N.** Bentonite in industry, A (2) 82.
**Wilson, R.** Measuring efficiency of pulverizers, A (3) 110.
**Wilson, W.** See Hawley, J. W.
**Wilson, W. M.** Fatigue tests of butt welds in structural plates, A (3) 96.
**Winbolt, S. E.** Roman villa in Sussex, A (4) 130.
**Windebank, C. S.** See Broughton, G.
**Winderlich, R.** Persian description of faience technique at Kashan in A.D. 1301, A (2) 54.
**Winfrey, R.** Preliminary studies of actual service lives of pavements, A (9) 307.
**Winkler, F. W., Mooney, F. X., Kuzell, C. R., and Mounts, M. T.** Patching interior surfaces of furnaces, P (10) 332.
**Winsor, H. C.** Industrial and structural products laboratory of Owens-Illinois Glass Co., A (5) 179.
**Winstone, C. L., *et al.*** Public lighting engineers, A (1) 13.
**Winter-Klein, N.** Causes and effects of strain in glass, A (4) 136; Influence of strains on variation of refractive index of glass, A (9) 304; Strain in glass: II, A (10) 327; see Arnulf, A.
**Winterkorn, H. F.** Adsorption phenomena in relation to soil stabilization, A (9) 313.
**Wirtz, K.** Relation of tensile strength of homogeneous glass rod to its cross-section, A (2) 65.
**Wise, C. H.** Furnace construction, P (2) 67.
**Wisfeld, W.** See Reinboldt, H.
**Witherow, C. N.** See Sheppard, M.
**Withington, W. H.** Ball, rod, and tube mills, A (10) 333.
**Witte, R. M.** Color grading, A (3) 93.
**Wittrock, O.** Experimental study of molecular theory of lubrication, A (6) 225.
**Wolf, G.** Determination of alkaline-earth metals, A (7) 263.
**Wolf, H., and Welsch, H.** Lightweight building materials with foamy structure, A (5) 184.
**Wolf, J.** Basic materials and their compounds as pigments in pottery, glass, and enamelware, A (6) 209; Notebook for glass, ceramics, enamel, and cements (1938), B (8) 294.
**Wolff, F. J.** Closet bowl, P (9) 309.
**Wolfram, H. G.** Black-edging problems, A (6) 212.
**Woltersdorff, G.** See Zintl, E.
**Wood, A. R.** Determination of alkali by autoclave method, A (1) 42; Determination of iron in sands and glasses, A (1) 43; Refractory body, P (1) 25.
**Wood, E. B.** Vapor-pressure humidostat and thermostat, A (4) 153.
**Wood, G.** Saucer design, P (7) 244.
**Wood, P. A.** Building construction, P (7) 252.
**Wooddell, C. E.** Polishing article, P (1) 4.
**Wooddell, C. E., Nelson, C. S., and Lincoln, R.** Abrasive article, P (7) 241.
**Woodforde, C.** Stained and painted glass in England, B (6) 210.
**Woods, W. J.** Glass drawing apparatus, P (8) 277.
**Woodward, G. R.** Bibliography on properties and uses of bentonite, A (5) 196.
**Woollett, G. H.** See Morse, W. C.
**Worcester, W. G.** Clays of bleaching type, A (1) 35.
**Work, L. T.** Factors influencing particle size and shape in grinding, A (3) 110; Particle measurement problems, A (10) 335.
**Wouda, J.** Colorimeter, A (2) 78.
**Wright, A.** Filtration of solid-bearing liquids, P (1) 32.
**Wright, A. G.** Cements and putties for chemical work, A (7) 244.
**Wright, B. V.** Longitudinal brick project, A (6) 220.
**Wright, T. A.** Uses and limitations of spectrograph for industrial control, A (1) 31.
**Wrighton, H.** Use of microscope, A (5) 194.
**Wuhrer, J.** See Jander, W.
**Wulf, C. A.** Surface pigmenting apparatus, P (8) 286.
**Wulff, P., Schwindt, H., and Takashima, S.** Measurement of dielectric losses and high-frequency conductivity: V, Low loss quartz condenser, A (11) 360.
**Wülfinghoff, F. A. M.** Selection of driers, A (6) 226.
**Wünsch, G., and Rühle, H.** Measuring instruments in industrial work, B (4) 153.
**Wyart, J.** See Michel-Lévy, A.; Sekanina, J.
**Wylie, C. R.** Briggs steel bathtubs annealed in huge atmospheric furnace, A (7) 245.
**Wyo-Lite Insulating Products.** Insulating furnace saves fuel, A (1) 46.

**Xardell, C. A.** Spark plug, P (8) 283.

**Yagai, H.** See Kamita, K.

**Yajnik, N. A., Kapur, P. L., and Malhotra, R. L.** Adsorption of precipitates: I, Adsorption by Fe, Al, and Cr hydroxides, A (8) 290.

**Yakhontov, N. P.** Classification of genetic types of graphite, A (4) 156.

**Yamamoto, H.** See Kamita, K.

**Yamauchi, T.** β meta-alite, A (4) 160; Study on celite part: I, System CaO–$Fe_2O_3$; II, Brownmillerite, A (4) 163; see Kondo, S.

**Yancey, H. F., and Geer, M. R.** Methods for estimating grindability of coal, A (11) 362; Performance of Baum-type coal-washing jig, B (6) 229.

**Yancey, H. F., Geer, M. R., and Shinkoskey, R. E.** Performance of pulsator-type coal-washing jig, B (6) 229.

**Yant, W. P.** See Brown, C. E.

**Yates, H. J.** See Radiation, Ltd.

**Yaworski, N., Spencer, V., Saeger, G., and Kiessling, O. E.** Fuel efficiency in cement manufacture (1909–1935), B (10) 337.

**Yeltyschev, B. N.** Lightweight refractory materials in industrial furnaces, A (1) 20.

**Yokoyama, T.** See Tabata, K.

**Yonemura, S., Okazawa, T., and Osada, K.** Producing pure alumina and crude K sulfate from alunite, P (2) 75.

**Yoshida, H.** See Kondo, S.

**Yoshimura, J.** See Iimori, S.

**Young, C. B. F.** Cleaning metallic surfaces, A (5) 174.

**Young, H. H., Jr.** Defoaming method and means, P (6) 227.

**Yung, V. N.** Calculation of raw materials for cement, A (1) 5; Theory of firing Portland cement in automatic shaft kilns, A (8) 271; Theory of hardening of lime-pozzuolana cements, B (1) 6.

**Yurchenko, E. Ya.** Circular annealing furnace for parabolic glass mirrors, P (5) 182.

**Zacharov, P.** Heat-resisting steels in industrial furnaces, A (8) 284.

**Zahabi, H.** See Travers, A.

**Zaikin, L. S.** See Dubinskii, A. P.

**Zalko, L. D.** Apparatus for cutting glass flowing from glassmaking furnace into plates, P (7) 249.

**Zaltsev, M. V., and Felgina, E. J.** Fusibility of zinc-bearing slags of system FeO–CaO–ZnO–$SiO_2$, A (6) 232.

**Zambrini, T.** Potter's art in Sicily, A (1) 4.

**Zamotaev, S. P., and Besedin, S. M.** Porcelain tubes with lutes as stable protective casings for thermocouples, A (1) 30.

**Zan'ko, A. M., and Davydov, A. L.** Use of $K_2Cr_2O_7$ in determining Fe content (total Fe content and FeO) in Fe ores and silicates, A (3) 121.

**Zaprometov, B. G., and Krutik, K.** Structural changes in ceramic membranes, A (11) 359.

**Zatzepin, K. S.** See Bychkov, M. Ya.

**Zatzepin, K. S., and Bychkov, M. Ya.** Colored Portland cements, A (6) 211.

**Zavadovskaya, E. K.** Determining porcelain porosity with microscope, A (9) 310.

**Zav'yalov, N. D.** See Bezborodov, M. A.

**Zegzhda, D. P.** Changes and destruction of blast-furnace brick in service, A (8) 280; Refractory clays of Belkinskii deposits, A (5) 198.

**Zeise, H.** Spectroscopic thermodynamics, A (9) 312.

**Zeissl, F.** Automatic grinding and polishing machine, P (4) 128.

**Zeman, J.** Manufacture of hygienic ceramics, A (10) 332.

**Zerchaninova, T. K.** See Oshman, V. A.

**Zhdanov, V.** Theory of melting and plastic deformation of solids, A (6) 234.

**Zhilin, A. I., and Ignat'eva, L. P.** Cast paving blocks from blast-furnace slags of Nizhne-Tagil iron and steel works, A (6) 219.

**Zhitomirskaya, E. Z.** See Zhukovskii, G. Yu.

**Zhukovskii, G. Yu., and Lyul'ev, B. V.** Obtaining crystalline glazes for facing Moscow subway, A (2) 76.

**Zhukovskii, G. Yu., and Poliyak, V. V.** Manufacture of rosaline glass in tank furnaces, A (5) 179.

**Zhukovskii, G. Yu., Rodin, S. V., and Zhitomirskaya, E. Z.** Magnetic separation of quartz sand for melting glass, A (1) 29.

**Zhukovskii, G. Yu., and Zhitomirskaya, E. Z.** Wind tunnel for deferrizing sands and their classification for abrasive purposes, A (1) 31.

**Zhuravlev, V. F.** See Kind, V. A.

**Zhuravlev, V. F., and Shamsonova, B. M.** Effect of chemical compounds on velocity of setting and mechanical strength of tamped cement, A (6) 212.

**Ziegler, H.** Manufacture and suitability of porcelain cables, A (7) 257.

**Ziener, T.** Fired-in colors—application in lamp-manufacturing industry, A (6) 215.

**Zimens, K. E.** Investigation of thermal behavior of alkaline-earth carbonates by emanation method: I, Monotropic conversion of $CaCO_3$, A (11) 365; II, $BaCO_3$ and $SrCO_3$—enantiotropic transformation, A (11) 365–66.

**Zimin, V. N.** Drying methods, A (6) 224.

**Zimmer, W. A., and Watts, A. S.** Cone deformation study of BaO–clay–silica system, A (9) 315.

**Zimmerman, H.** Ventilated buffing wheel, P (5) 171.

**Zimmerman, H. W.** Cylinder surfacing tool, P (8) 268.

**Zimmerman, J.** (editor). Mines register, 1937: Vol. XIX, B (4) 159.

**Zimmerman, T.** Machine for honing conical surfaces, P (3) 92.

**Zimmerman, W. P., and Holmes, M. K.** Building block, P (5) 182; Forming hollow glass articles, P (10) 328; Manufacturing multipart glass articles, P (1) 16; Method of manufacturing multipart glass articles, P (3) 102.

**Zimmermann, K.** Blue smoking of roof brick, A (2) 75.

**Zintl, E., Morawietz, W., and Woltersdorff, G.** Ortho salts of O acids, A (2) 86.

**Zisserson, L. B.** See Kitaigorodskii, I. I.

**Zlatkin, S. G.** See Mamykin, P. S.

**Zotos, G.** Charging rapidly rotating furnaces for melting glass, P (10) 327; Drawing off molten glass from rapidly rotating furnaces, P (10) 327; Fusion furnace for silicate glass, P (8) 277; Method of heating rapidly revolving tube furnaces for melting glass, silicates, and refractory material, P (6) 227; Method and plant for melting glass or refractory minerals in revolving tube furnaces, P (8) 286.

**Zschacke, F. H.** Dependence of reaction velocity in glass batches on physical properties and chemical composition of raw materials: III, Relative melting velocity with hydrated and dehydrated borax, A (6) 214; Magnesia as raw material for glass, A (5) 179; Muffle leers and leers with direct firing, A (2) 64; Significance of secondary glassforming materials in glassmelting, A (1) 14; Zinc oxide in glass industry, A (2) 67, A (6) 231.

**Zschimmer & Schwarz Chemische Fabrik Dölau.** Drying of residues from alumina fabrication, P (9) 308.

**Zubkov, P. R.** Mechanism for unloading brick from Hoffman kiln, A (1) 33.

**Zwicki, J. R.** Viscosity and Reynold's number, A (4) 164.

# SUBJECT INDEX TO CERAMIC ABSTRACTS
## Volume 17, 1938

The reference number in parentheses refers to the *monthly* issue of *Ceramic Abstracts;* the number following is the *page* number. The letters A, B, and P, preceding the reference number, indicate an abstract of (A) an article, (B) a book, bulletin, or separate publications, or (P) a patent.


**Abrasive apparatus.** See also *Buffing apparatus; Grinding apparatus; Honing apparatus; Lapping apparatus; Polishing apparatus.*
abrading types: or cutting tools of hard metal, P (5) 170; for lenses, P (11) 346; roll-type, P (10) 321; and rotary tool machines, P (6) 208.
abrading types, patent designs on, P (1) 3, P (2) 52, P (4) 128, P (6) 208, P (7) 240–41, P (8) 268, P (9) 295, P (10) 321–22, P (11) 346.
for abrasive production, P (5) 169.
abrasive sleeve and method of forming, P (4) 128.
abrasive teeth for stone saws, P (2) 52.
airless abrasive cleaning machines for vitreous enameling, A (3) 96.
assembly of, P (8) 268.
Carboloy-tipped tool for finish boring of drill holes, A (5) 169.
covers for abrasive tools, P (5) 170.
cutting-off or severing machine and wheel, P (7) 241.
disks, P (11) 346.
abrasive-coated, P (10) 322.
ceramic bond for, A (8) 267.
ebonite, P (7) 241.
selection of, A (6) 207–208.
vulcanite binder for, P (7) 241.
for dressing abrading wheel, P (1) 3.
for emery grading, P (10) 322.
for feeding abrasives to glass-grinding table, P (10) 322.
for filing or abrading, P (11) 346.
at Leipzig Spring Fair, A (3) 91, A (10) 321, A (11) 346.
metal reinforcement for abrasive teeth, P (2) 51.
pad, P (3) 92.
for polishing and buffing, P (3) 92.
portable abrading and filing types, P (2) 52.
sanding block, P (1) 4.
saw tooth, P (2) 52.
for separating and cleaning, P (1) 31.
sleeves and rolls, P (9) 295.
for strand material, P (3) 92.
for surface polishing, P (3) 93.
surfacing machines and abrasive drums, P (2) 52.
table surfacer, P (5) 171.
throwing machine, P (1) 31.
tools, porous, with conducting properties, P (10) 322.
wheels, abrading sheet and holder, P (7) 240.
and abrasive bands, B (9) 295.
bakelite- *vs.* rubber-bonded, surface speeds for, A (6) 207.
for castings, forgings, and stampings, data, A (7) 239–40.
centrifugally cast, P (7) 241.
composite type, P (9) 295–96.
for glassworking, A (8) 274.
iron and ferric chloride bond for, P (10) 322.
and mounting, P (5) 169, P (7) 241, P (11) 346.
patent designs on, P (2) 52, P (3) 92, P (5) 169–70, P (7) 240–41.
permeated with artificially produced hollow spaces by artificial resin and abrasive particles, P (11) 347.
segmental, method for, P (8) 268–69, P (10) 322.
shellac-bonded, P (5) 171.
silicon carbide, for glasswork, A (2) 63.
for throwing abrasive, P (1) 31.
truing device, P (11) 346.
**Abrasive industry** in Germany, handbook on grinding technique, B (1) 1–2.
**Abrasive plants,** Macklin Co., expansion of, A (1) 2.
Norton Co. house publications, A (6) 237.
**Abrasives.** See also *Corundum; Silicon carbide.*
abrasion resistance: of cast iron, machine for, A (6) 207; of low alloy steel (medium manganese), A (4) 127.
**Abrasives** (*continued*)
agglomerated granular material, composition, P (8) 268.
alkali-silicate cement, composition, P (6) 208.
alumina and sodium hydroxide, production, P (5) 170.
aluminum oxide and silicon carbide, review of manufacture, A (1) 1.
artificial: manufacture and use, B (10) 321; types, A (1) 1–2.
bonded (bonds), ceramic-bonded: methods for, P (10) 322; for disks, A (8) 267.
composition, P (6) 208.
granular bodies: testing and classifying, P (4) 128; self-bonded granular material, production, P (1) 3.
for lining pulp-refining engine, P (10) 322.
for pressed and slip-cast disks, properties of, A (3) 91.
resin-bonded, preparation, P (10) 322; resin-coated, method, P (6) 208.
shellac-bonded, P (5) 171.
solidified binder for, P (6) 208.
vulcanite binder for disks, P (7) 241.
boron carbide composition, P (10) 322; manufacture, P (6) 208, P (9) 295–96, P (11) 346.
brick, track-grinding, P (10) 322.
burnishing procedure, A (1) 1.
carbides: cemented, for cutting tools, A (9) 295; cemented, diamond wheel for grinding, A (7) 239; hard cemented carbide composites, P (5) 171.
finishing cemented carbides, A (6) 207.
fused carbide composition, P (5) 170.
metal carbides production, P (6) 209; electric-furnace structure for, P (9) 296.
mixed, manufacture of, P (6) 208.
and cement, P (8) 268.
cements, alkali-silicate composition, P (6) 208.
clay and Portland cement, corundum and "resol" rosins in, A (8) 267.
clays for, effect on physical properties of grinding wheels, A (2) 51.
for cleaning and polishing block, P (5) 170; microscopic tests, A (11) 345.
coated (Carborundum Co.), P (3) 92; for abrasive-coated products, P (4) 128, P (10) 322, P (11) 346.
coatings, method and apparatus, P (5) 170.
coatings for polishing wheels, A (3) 91.
composite article, P (5) 170.
composition, P (7) 240, P (11) 346; and firing, P (7) 240; method, P (7) 241.
corundum, with ceramic bond, grinding process, A (5) 169.
curved fabric, P (7) 241.
cutting methods, A (6) 207.
dense nonmetallic bodies, P (5) 170.
diamond abrasive body (Norton Co.), P (3) 92.
diamond fragments or dust with alloy, P (7) 240–41.
diamonds: carbonado, ballas, and bort, A (9) 295; granulation and quality control for disks, A (11) 345; for grinding disks, A (11) 345.
electrically fused alumina, capillarity and surface tenacity of, A (11) 345.
emery, apparatus for grading, P (10) 322.
emery and raw rubber bond for grinding rings and cylinders, P (6) 209.
emery from Samos, composition, A (9) 295.
emery cloth and sandpaper, production, A (8) 267.
fibrous buff, P (5) 170.
flexible: production, P (9) 169, P (5) 170, P (11) 347; flexible-backed abradants, P (5) 170; flexible-coated, P (9) 296.
grain, for metal polishing and buffing, A (7) 239–40.
granulation test, sieving process, A (3) 91.
for grinding and polishing bodies, P (6) 208–209; handbook on methods, I–IV, B (1) 2–3; see also *Grinding; Polishing.*
grinding rings from emery and raw rubber medium, P (4) 128.
and grinding tools, use and types, A (11) 345.
for grinding wheel, composition, P (11) 346.
grindstones, profiling of, P (2) 52.
grits for grinding, review, A (8) 267.
for hard substances, shaped bodies from, P (7) 241.
hardness of, materials for, A (1) 1–2.
industrial types, A (1) 1–2.
for lapping various materials, A (3) 92.
magnesium-silicate bodies, optical tests, A (2) 51.
materials for, Bur. Mines data, B (11) 346.
for mechanical surfacing, theorems, A (4) 127.
method of making, P (5) 169, P (6) 208, P (11) 346–47.
natural and artificial, test methods and graphs, A (11) 345; natural and manufactured, composition, A (3) 91.
Nuglu, A (8) 268.
oilstones, data, A (11) 345.
porous types, method, P (3) 92.
powders, fine, size determination, A (5) 169.
preformed, production, P (7) 241.
production (Norton Co.), P (8) 268.
for rapid grinding of new and damaged carbide tools, A (2) 51.
rubbing brick, P (9) 296.
sandpapers and emery cloth production, A (8) 267; manufacture, P (1) 4; materials for, A (1) 2; waterproof, P (4) 128.
sands for wind tunnel for deferrizing process, A (1) 31.
sheet, method of production, P (1) 4.
silicon carbide, surface structure, A (1) 2.
silicon ware, production, P (7) 242.
solid and compressible, composition, P (9) 295.
solidified binder for, P (6) 208.
stellite rollers for cylindrical work, A (7) 239.
stones, test machines, P (1) 3–4.
surface preparation, P (7) 242.
synthetic, development of new "thermal microscope" for tests, A (4) 152.
test machine for cast iron, effect of various elements, A (6) 207.
test methods and graphs, A (11) 345.
titanium silicides, hydride process, III, A (11) 345–46.
track-grinding brick and adapter, P (1) 4.
unit abrading element, P (4) 128.
use, granulation, bonding, hardness, and structure of, relation, A (6) 207–208.
vulcanite binder for disks, P (7) 241.
wear resistance *vs.* hardness, test methods, A (1) 2; wear test method, A (1) 2.
**Abstracts,** Nat. Physical Lab., 1936 papers, A (5) 204.
**Acid stability,** acid-stable bodies, microscopic studies, A (1) 25; see also *Enamels, acid-stable.*
**Acidity** of tropical soils, data, A (6) 231.
**Acoustics.** See *Insulating materials.*
**Adhesives** and caulking material, Plasoleum, A (4) 165.
for polishing wheels, composition, A (8) 267.
sodium silicate, P (5) 203.
**Adiabatic drying,** process, A (10) 333.
**Aërodynamics** as basis of fuel technology study, A (4) 153.
**Aerograph machine** for color-spraying of hollow glass, A (11) 350.
**Agglomerates,** agglomerate tabling of nonmetallic minerals and froth flotation, A (4) 150.
**Agglomeration** and viscosity in dilute suspensions, A (8) 290–91.
**Aggregates,** coarse, grading machine for, A (3) 103–104.
for heat-resisting concrete, Haydite, C-3

**Aggregates** (*continued*)
Sil-O-Cel, and vermiculite, A (4) 144–45.
lightweight fibrous inorganic type for insulating brick, A (9) 307.
and road metals, wear tests, A (4) 142.
**Air.** See also *Air conditioning; Ventilation.*
dust and water removal from, A (10) 335.
compressed: costs in glass plant, A (5) 192; oxygen content, Lindemann-Winkler apparatus for, A (5) 200.
**Air conditioning** and drying, fundamentals, A (8) 284.
effect on building design, A (2) 75.
Keenan-Keyes steam tables for data, A (6) 226.
metal-fabricated air filter, A (10) 333.
in mines for health and safety, B (8) 294.
problems in glass block building, A (8) 276.
psychrometric chart for computations, A (4) 152.
**Air cooling** of plate glass, process, P (11) 352.
**Air drying** of solids, process, A (10) 333.
**Air flotation separation,** apparatus for, P (2) 79; see also *Flotation.*
**Air flow,** psychrometric slide rule for problems in, A (4) 152.
**Air hygiene,** physics studies, A (2) 89.
**Air Hygiene Foundation,** fall meeting, A (3) 121.
**Air process,** hot moist air for drying ceramic products, A (10) 334.
**Air-vapor mixtures,** psychrometric tables for, use, A (6) 226, A (7) 258.
**Airless shot-blasting** *vs.* sandblasting, A (10) 333.
**"Akarkhite,"** artificial breccia-like marble, A (6) 211.
**Alabama,** clays of, A (9) 313.
**Albite,** anorthite, and microcline, chemical and optical properties, II; optical orientation of potash-bearing plagioclase, III, A (1) 37.
and beryl, contemporaneous crystallization *vs.* replacement, A (5) 196.
chemical composition, A (1) 35.
melts, water solubility in, data, A (3) 116.
**Alite,** *β* meta-alite, tests on, A (4) 160.
**Alkali aluminosilicate minerals,** cathodoluminescence spectra of, A (9) 313.
**Alkali aluminum silicates,** validity of Hüttig's equation for permutites, VIII, A (2) 84.
**Alkali biotite,** rare, in N. C., A (5) 198.
**Alkali micas,** chemical composition, A (1) 35.
**Alkali oxide–CaO–$Al_2O_3$–$SiO_2$–$CO_2$:** stable equilibria in system $Na_2O$–$SiO_2$–$CO_2$ and pressures of $CO_2$ in reaction between $K_2CO_3$ and $K_2SiO_3$, V, A (2) 87.
**Alkali oxide–CaO–$SiO_2$–$CO_2$,** equilibria, reaction velocities, and relation to glass-melting process, I, A (5) 202; conclusion, A (6) 234.
**Alkali silicates,** preparation, P (5) 202, P (7) 264; alkali subsilicates, preparation, P (2) 87, P (4) 164, P (7) 264, P (8) 292.
**Alkaline-earth metals,** Brill method for determination of, A (7) 263; preparation, P (5) 202.
**Alkaline liquids,** borosilicate glasses resistant to, P (4) 140.
**Alkalis,** analysis of, qualitative separations on a microscale, A (8) 291.
autoclave method for determination, A (1) 42.
in refractories, action of: action of potassium chloride vapor at 1000°C, II, A (2) 69; volatilization from alkali-impregnated refractories at 1000°C and 1100°C, III, A (2) 69.
in refractories, action of: effect of alkali chloride vapor at 1000°C, VIII, A (2) 69; experiments on vapor action from sodium aluminate and sodium carbonate at various temperatures, IX, A (2) 69, A (5) 185.
*vs.* resistivity, effect of, A (3) 108.
in silicates, estimation, A (10) 342.
in silicates, Pukall method, A (1) 42; Pukall simplification of J. Lawrence Smith method, A (10) 342.
**Alkazid process** for gas purification, A (9) 316.
**Allotropy** of barium and calcium, A (7) 263.
**Alloys.** See also *Metals, alloy steels.*
carbon-free, hardness, A (4) 149.
cast steels, creep-test data A (6) 225.
cemented tungsten carbide, data, A (11) 359.
for clay plant machinery, wear tests, I, B (8) 286.

**Alloys** (*continued*)
corrosion resistance, A (9) 310; and corrosion-resistant metals, symposia review, A (4) 149.
ferrous, boride crystals for production, A (10) 334.
for glass: special types, A (9) 304; heat-resisting nickel, for glass industry, A (5) 192.
hard, wear tests, A (1) 2.
hard-facing solutions, A (3) 110.
heat-resisting, American and British types, A (7) 245.
heat-resisting, in short-cycle malleableizing furnaces, A (11) 360.
heat-resisting, thermal expansion and effect of heat treatments on growth, density, and structure, A (9) 311.
heating elements, Fe-Cr-Al, electrical resistance tests, A (1) 27.
high-temperature properties for the Navy, A (6) 225.
hydrochloric-acid resistance, A (9) 311.
in iron–cobalt–copper system, studies, A (5) 175.
iron–cobalt–tungsten, hardness, A (4) 149.
of iron and nickel, magnetic permeability, A (6) 225.
for joining ceramic ware and metals, P (5) 191–92; for soldering to unite ceramic and metal surfaces, P (8) 294.
Kanthal, for resistors and other furnaces, A (3) 109.
Kovar, for metal-to-glass seals, P (3) 102.
lithium in, use, A (5) 197–98.
nickel or chrome, finishing process, A (7) 239–40.
nickel-chromium (Ni-Cr) for electric resistors, A (1) 29; failure of a gold fuse in contact with, A (2) 81.
"Ni-Resist" and "Nicrosilal," high-alloy cast irons, A (5) 192.
precious-metal alloy contact points, microanalysis, A (4) 162.
resistor, chromium-aluminum-iron, A (1) 30.
review of progress, 1937, A (6) 222.
silicon, occurrence of silicosis in, A (6) 237.
steels: for glassworking molds, A (7) 248; study of inclusions in, A (1) 9; tension and notched-bar tests, A (1) 9.
tabular data on physical properties and classification, A (6) 225.
tensile-strength measurements, statistical theory and methods, A (11) 366.
**Alumina**–CaO–$SiO_2$, diagrams, A (6) 234–35; X-ray tests, A (9) 317.
–FeO, studies, A (1) 41, A (5) 202.
–FeO–MnO, studies, A (5) 202.
–FeO–$SiO_2$, diagrams and studies, A (9) 317.
basic aluminum nitrate, production, P (11) 357.
from bauxite: extraction, *P* (4) 146; Müller-Hiller modification of Bayer process, A (2) 69.
"beta-alumina," crystal structure, A (1) 42; linear thermal expansion, A (11) 354.
from clay or aluminous ore, production, P (6) 223.
from clays, extraction processes, review, A (10) 330.
from clays, kaolin, bauxite, extraction, P (1) 24.
combined alkaline method, A (2) 70.
in crown glass, effect on chemical resistance, A (2) 61.
disintegration by sodium sulfate, A (2) 70.
Dnieper plant production, A (2) 73.
drying of residues from, P (9) 308.
extraction with sodium hydroxide after recovery of potash and sulfur trioxide with ammonia, III (*f*), A (11) 354.
and ferric oxide, reactions with sodium carbonate, A (2) 86.
and fertilizers from Chinese alunite, process, III (*e*), (*f*), A (11) 354.
hydrated, calcination, A (1) 41.
low-silica, at Volkhov plant, A (2) 73.
and natural silicates, manufacture, A (2) 73.
and potassium sulfate, method, P (8) 281.
production, P (1) 24, P (11) 358; apparatus for, P (11) 357.
pure, and crude potassium sulfate from alunite, process, P (2) 75.
pure, process, P (11) 347; pure compound production, P (9) 309.
reactive, acid-soluble type, production, P (11) 367.
recrystallized, with crystalline aluminate for spark-plug insulator, P (9) 309.

**Alumina** (*continued*)
Séailles process for production from bauxites, A (5) 185.
semidry method for extraction, A (5) 186.
separation by Kallauner-Matějka method, A (1) 44.
and silica in glass, relation, A (7) 246.
and silica gels, synthesis experiments, A (1) 36.
from sinter, effect of iron oxide on extraction, A (2) 85.
and sodium hydroxide, treatment, P (5) 170.
and sulfur dioxide, preparation from bauxite-gypsum mixtures, A (1) 21.
and titania in clays, effect on refractoriness, A (8) 280.
waste products in preparation of, for Portland cement and binding materials, A (3) 106.
waste products of, uses, A (3) 106.
**Alumina dust,** health hazard of, A (5) 204.
**Alumina-magnesia-chromite ore,** treatment, P (5) 203.
**Alumina powder,** industrial production, P (1) 24.
**Alumina refractories.** See *Refractories.*
**Aluminate solutions,** effect of iron oxide sol on stability, A (2) 85.
silica and phosphoric acid in, colorimetric determination, A (1) 41.
**Aluminates,** aluminous calcium, preparation, I, A (4) 131; calcium, reactions with water, A (2) 55; see also *Barium aluminates.*
**Alumino-silicate materials,** synthetic, base-exchange properties, II, A (3) 118.
**Aluminous frits,** rational analysis by lime and sodium carbonate process, A (1) 44.
**Aluminous siliceous material,** treatment, P (8) 294.
**Aluminum** in aluminate solutions, volumetric method for determination, A (2) 87.
and bauxite, Bur. Mines Rept., B (11) 357.
from bauxite clays of Grudków, A (9) 313.
and beryllium: determination, A (5) 199; separation process, P (5) 203.
and clay, etymology of Polish words relating to, A (9) 318.
electrometric titration for determination, A (9) 315.
on glass surfaces, adherence, A (9) 301.
on glass surfaces for heating elements, A (1) 15; Schoop spray method, A (4) 137; technical applications, A (9) 301.
grinding and polishing, A (3) 91–92.
iron, and titanium in silicates, accelerated determination, A (4) 150.
for reduction of silicate inclusions in steel, A (4) 135.
Russian deposits, A (6) 231.
for silicosis, as aid for reduction, A (1) 46; metallic, for silicosis prevention, A (5) 204.
**Aluminum arsenate,** crystal structure, A (2) 82.
**Aluminum carbide,** heat of formation and specific heat, A (9) 316.
**Aluminum compounds,** recovery, P (10) 332; recovery from aluminiferous minerals, P (9) 309.
with spinel lattice, crystal and chemical studies, A (2) 84.
**Aluminum hydroxides,** geological reasons for formation, A (10) 339.
production, P (9) 308; aluminum hydroxide sols, mechanism of electrolyte adsorption by, A (9) 316.
**Aluminum mirrors,** production by evaporating metal in vacuum, A (4) 139.
**Aluminum ore,** world resources, A (1) 40.
**Aluminum oxide,** analytical determination, A (2) 84.
from bauxite, production, P (9) 309.
extraction from raw materials, P (9) 308; separation, P (1) 24.
in silicates, direct determination, A (5) 200; from siliceous material, process, P (9) 309.
**Aluminum oxyhydrate,** manufacture, A (1) 2.
**Aluminum phosphate,** crystal structure, A (2) 82.
**Aluminum solutions** containing nitrates with antimony electrode, potentiometric titration of, A (10) 342.
**Aluminum sulfite,** monobasic, production, P (11) 367.
**Alunite,** Chinese, alumina and fertilizers from, III (*e*), (*f*), A (11) 354.
natural, potassium hydroxide for extraction, III (*e*), A (11) 354.
potassium and ammonium in, production, A (4) 157.
**Amelung, J. F.,** glass goblet, A (2) 53.
**American Society for Testing Materials,** classification and selection of coals, B (2) 90.

**A. S. T. M.** (*continued*)
and Hardgrove methods for determining grindability, A (9) 310.
proceedings of 40th Annual Meeting, 1937: Comm. repts. and tentative standards, I; technical papers, II, B (7) 266.
proposed method for tumbler and drop-shatter coal tests, A (4) 154.
**"Ammonium-calcium" permutites,** bentonites, and clays, mixed, thermal decomposition, A (8) 292.
**Ammonium molybdate reagent,** preservation, A (6) 233.
**Ammonium sulfide group,** iron, aluminum, and chromium in, quantitative separation, A (5) 201–202.
**Amorphous bodies,** total mechanical deformation, A (4) 162.
**Amphiboles,** regeneration from their melts at normal pressure, A (3) 116.
**Anauxites** and kaolins, densities and structural relationships, A (4) 156, A (5) 198.
**Andalusite,** coarse-grained, for refractory bodies, VI, A (1) 19.
**Andrade viscosity formula** for glass, A (9) 302.
**Anhydrite,** gypsum sponge formation from, A (1) 6.
**Anhydrous water-soluble silicates,** preparation, P (5) 202–203.
**Anion adsorption** by soil colloids, relation to changes in free iron oxides, A (2) 81.
**Annealing,** bright, of sheet steel in electric furnaces, A (6) 212.
chamber furnaces for, A (3) 99.
of glass, electric heat for, A (1) 33.
of glass, law of quantitative treatment and molecular interpretation, A (4) 138.
of glass-to-metal ware, P (5) 183.
of metals, special atmosphere furnace for, A (4) 154.
process for cleaning sheet iron, A (2) 56.
of sheet steels, atmosphere furnace, A (6) 212.
**Anorthite** in Alaska, A (10) 338.
chemical studies, A (10) 339.
**Antimony** for chemical industry, A (4) 155.
spectrum in extreme ultra-violet range, A (1) 44.
**Apatite,** structure, A (4) 158; structure studies of isomorphism, A (5) 198.
**Apatite-phlogopite** in Quebec, Can., A (10) 340.
**Apatite porcelain** and bone china, manufacture (Japan), A (3) 108.
**Apparatus.** See also specific types, such as *Abrasive apparatus; Balances; Glass apparatus; Grinding apparatus,* etc.; and general types of apparatus throughout index.
abrasion-testing machine for cast irons, A (6) 207.
Analygraph for controlling "controlled atmosphere," A (4) 149.
for approximate specific-gravity tests, A (10) 333.
automatic control in chemical industries, A (5) 192.
automatic proportioning device for ceramic materials, P (3) 112; automatic weighing and feeding machine, P (2) 79.
for brick volume measurements, A (9) 310.
calipering-type, P (1) 3.
coercimeter, development and application, B (11) 365.
for constant humidity maintenance, A (5) 192.
daylight factor meter, portable photoelectric type, A (10) 335.
for dehydration of minerals, A (9) 310.
for delivering measured quantities of granular materials, P (3) 112.
for dew-point determination, A (10) 333.
for gas analysis, portable, A (9) 310; for microanalysis of gases, A (8) 283.
for glass defects, A (9) 301.
for heat-transfer tests on porcelain-enamel metals, B (9) 301.
high pressure-high temperature steam service, materials for Navy, A (6) 225–26.
for high-temperature measurements, types, A (4) 151.
improved trap for moisture determination by distillation, A (10) 334.
instrumentation, exact science combined with fine art, A (4) 150.
material handling equipment, I–VIII, A (3) 110.
for material tests, nondestructive, by X-ray shadows and magnetic tests, A (11) 365.
for metal spraying, A (6) 226.
**Apparatus** (*continued*)
meter for clay and mineral dusts, application, A (2) 78.
microrefractometer of simple design, A (10) 334.
for microscopic examinations in polarized light, A (8) 283.
orifice, fluid pressure or velocity measurements in pipe line, A (10) 334.
particle-size analyzer, A (10) 335.
porcelain enamels for cast-iron types, A (10) 325; for metal machine parts, A (9) 299.
for porosity tests on fire brick, gas expansion *vs.* liquid absorption, A (3) 103.
pothead, patent design, P (7) 257.
for printing on glass or metal, P (5) 194.
for roughness and unevenness measurements of metals, A (10) 321.
sample splitter, P (10) 336.
for snap-bursting pressure tests on glass bottles, A (9) 301.
soil moisture meter, A (6) 231.
spray head, P (10) 336.
steam *vs.* electric drives, relative advantages, A (6) 224.
for surface roughness tests, P (10) 336.
temperature-control types for vitreous enameling, A (10) 324; regulator for controlling melting temperatures, P (9) 312.
tool steels, purchase and inspection, A (11) 360.
vapor-pressure humidostat and thermostat, A (4) 153.
for viscosity and moisture tests of greenware, A (9) 310.
**Aragonite** and calcite, measurement of proportions in precipitated chalk, A (9) 316.
**Archeology.** See also *Art and artware.*
Attic amphora, geometric and pictorial design, A (4) 130.
British School of Archeology, Athens, Greece and Crete specimens, A (2) 53.
chimneys of old Spain and England, development, A (7) 252.
Chinese glass, spectrographic studies, A (4) 139.
Cretan copper, A (10) 323.
in Egypt: Egyptian "nummi vitrei," A (8) 269; history of faience tile, B (1) 4.
in Egypt: glass specimens, A (2) 62; Roman glass, B (2) 54.
in England: neolithic pottery of, A (4) 130; Roman pottery kiln, A (7) 260; Roman villa in Sussex, A (4) 130; Romano-British pottery, A (10) 323.
Etruscan art, types, A (1) 4; Etruscan vase, A (10) 323.
Greek, Paestan pottery, B (10) 323.
Greek and Roman types, A (2) 53.
in India: Chanhu-Daro excavations, A (1) 4; Nal pottery, A (5) 171.
Iranian Expedition, Nishapur excavations, A (9) 297.
"Jomon-Doki," prehistoric earthenware, A (2) 53.
Near East, buried cultures of, II, A (3) 93.
pottery and glass, recent discoveries, A (10) 323.
pottery, textbook, B (9) 297–98.
Scandinavian, B (4) 130.
Syrian: dishes, A (10) 323; glass vase, A (2) 54; pottery from Atchana, A (10) 323; prehistoric pottery, A (4) 130.
Tepe Gawra: excavations, A (1) 4; pottery and kilns, A (4) 130.
terra cotta from Afrasiab, B (10) 323.
tile, glazed, in palace of Rameses II, A (6) 210.
in U. S., laboratory at Jamestown Island, Va., A (4) 128.
Younge site, pre-Columbian groups, B (6) 211.
**Architecture.** See also *Building materials; Structural materials,* and cross-references.
adobe house construction, problems, A (7) 252; adobe houses in southern Calif., A (7) 252.
air conditioning and artificial lighting, effect, A (2) 75.
British modern types, 1900–36, A (5) 190.
ceramic trends, A (3) 107.
glass for, B (9) 305; decorative forms of glass, A (8) 274; special glass, I, A (9) 303.
glass: in England and France, A (8) 272; in Italy, application, A (1) 12.
glass in moving-picture studios, A (8) 273.
glass-block walls for houses and interiors, photos, A (8) 275.
**Architecture** (*continued*)
glass medallion of Sidney Waugh, A (8) 269.
glass panels, binding materials for, A (8) 272.
Kansas City auditorium, lighting fixtures and terra cotta walls, A (8) 282.
metal houses, open-hearth iron for porcelain enamel, A (10) 325.
old Colonial houses, protective solution for porous stone and aging brick, A (3) 122.
old La. buildings, ceramic materials, A (10) 329.
panels, enamels for, A (10) 324.
Pittsburgh Glass Inst. contest, A (8) 269.
porcelain enamel for, clip-strip system, A (2) 57.
porcelain enamel at International Exhibition of Paris, A (2) 56, A (4) 135.
porcelain enamel for private home, A (4) 135.
porcelain steel buildings, A (4) 135.
**Argillaceous materials,** plastic white and colored, for the chemical industry, A (2) 82.
**Argillaceous sediments,** mica in, A (4) 157.
**Armco research laboratories,** A (8) 292.
**Armstrong brick** for atmospheric furnaces, A (7) 245.
**Arsenates,** hydrated titanium-iron, method of making, P (3) 121.
**Arsenic** in steels and cast irons, stannous chloride method for determination, A (4) 160.
**Arsenic-free glass,** Kjeldahl flasks, A (2) 64.
**Arsenic trioxide** and sodium nitrate in glass melts, behavior, A (4) 136.
**Art and artware.** See also *Archeology; Chinaware; Decoration; Delftware; Exhibitions; Faience; Glass; Glazes; Majolica; Mosaics; Museums; Porcelain; Pottery; Tableware.*
Abyssinian pottery, Claud Russell Collection, A (4) 130.
American industrial ceramics for jobless, A (6) [illegible]; New Deal murals, A (4) 128; Ohio [illegible]eral Art project, A (9) 296.
American pottery, tulip ware of Pa. Germans, A (5) 172.
Canadian Guild of Potters, work of, A (9) 296.
ceramic figures of Jean Manley, A (7) 242.
ceramics and glass at Paris Exhibition, A (8) 269.
Chinese ceramics: Cory Collection in British Museum, A (4) 128–29; Kent Collection of mortuary figures, A (4) 129; Kern Collection, teapots, A (7) 242.
fusing glass on gold, process, A (4) 134.
of Ming and Ch'ing periods, A (8) 269; Ming porcelain and underglaze *rouge-de-fer,* A (4) 130; Ming stoneware statue, A (8) 270.
porcelain: and medieval ware, A (7) 243; silver-mounted, A (8) 270.
possible destruction, A (8) 269.
Sung figurine, A (8) 270.
T'ang Dynasty pottery figure, A (8) 270; pottery horse, A (8) 269.
terra cotta horses, A (7) 242.
crystal containers, A (7) 242; crystal tables, sculptured, A (7) 243.
Czechoslovakian decorative ceramics, A (5) 171, A (7) 242.
electric firing costs, A (11) 362.
enamels: French enamelers of 19th and 20th centuries, A (8) 271.
enamels: history and evolution, A (11) 348; in Russia, history, A (8) 270.
enamels, Renaissance "Lion" jewel, A (5) 171.
enamels, 17th Century Bavarian pieces, A (9) 296.
English types. See also *Art and artware, Metropolitan Museum.*
Coronation products, A (3) 93.
Lowestoft cup, A (2) 53.
porcelain and pottery: Elliot Collection, A (7) 243, A (9) 297, A (10) 323.
porcelain, Spode Chelsea reproductions and Royal Copenhagen ware, A (10) 323.
pottery, silver-mounted, A (8) 270.
Victoria and Albert Museum: specimens, A (7) 243; Buckley Collection of glass, A (2) 54.
Etruscan vase, A (10) 323; Etruscan terra cotta, A (1) 4.
faience, Dresden, history, A (11) 347.
French, ancient ceramic collections, A (10) 323.
glass, artwork of technical group, A (5) 171.

**Art and artware,** glass (*continued*)
Bohemian, A (7) 242; hollow type, decoration, A (9) 296.
Danish, Holmegaard plant, A (7) 247.
design and form in, relation between, A (7) 242–43.
evaluation, A (5) 171.
grisaille, history, A (11) 347.
history of modern types, B (5) 181.
Lorimer Exhibition, A (8) 269.
painting of Glomi (Italian decorator), A (8) 269.
Ruhmann, Franz, Collection, history of glass, I, A (4) 137; II, A (6) 215.
Venetian, modern, A (7) 243.
Walpole Collection, ancient painted glass, A (7) 249.
Haban ware, A (7) 243.
industrial, in England, B (2) 54.
industrial, for glass industry, A (2) 60, A (8) 269.
*vs.* industry, relation, A (6) 210.
Italian terra cotta, work of Luca della Robbia, A (11) 347; Schiff Collection of Italian majolica, A (9) 297, A (10) 323.
Martin ware, history, B (3) 93.
Maya and Peruvian ceramics, A (6) 210.
Meissen porcelain for chessmen, A (4) 128.
Metropolitan Museum, American: 18th Century goblet, A (2) 53; early blown glass, A (9) 296; wine glasses, A (2) 52.
English types: delftware of Bristol, A (9) 297; Lambeth delftware, A (9) 297; Lowestoft cup, A (2) 53.
Etruscan terra cotta, A (1) 4.
Greek and Roman additions, A (9) 296; antiquities, A (2) 53.
Italian: early majolica, A (9) 297; modern glass, A (9) 297.
pottery of Iranian Expedition, A (9) 297.
Sèvres porcelain, Gary bequest, A (2) 53.
Sung fresco and Chinese porcelain, A (9) 297.
Syrian glass vase, A (2) 54.
Tleson cup, A (9) 296.
Parish-Watson Galleries, medieval art, A (7) 243.
in Pa.-German school, A (9) 296.
Persian bowl, A (7) 243.
Polish folk types, A (3) 93.
porcelain, Capo di Monte, 18th Century, A (7) 242.
porcelain and china, work of J. Willems, A (7) 243–44.
porcelain, Imperial Vienna, collection of Ferdinand Bloch-Bauer, A (6) 209.
porcelain garniture from Vincennes, A (7) 243.
potters, problems of, A (10) 323.
pottery, enameled, *Tingere ei Aurum*, A (10) 323.
pottery, Quetta Collection at Indian Museum, Calcutta, A (5) 171.
Russian Imperial Treasures, glass and china, A (8) 269–70.
Samian ware (terra sigillata), names for, A (5) 171–72.
Sèvres porcelain, A (7) 243; Sèvres urns at Antiques Exposition, A (9) 296.
in Sicily, types of pottery, A (1) 4.
Slovak ceramics in Prague, types, A (7) 243.
Stuttgart School of Art on glass form and decoration, A (2) 62.
terra cotta andirons and firedogs, A (2) 53.
Whieldon brackets and animal motifs, A (8) 269.
Würzburg collections, old glass and ceramic work, A (5) 171.
**Art schools,** Newcomb Art School, A (5) 171; Pa.-German school, A (9) 296.
**Artists** in America since 1929, A (4) 128.
Austin, H. W., pottery, A (3) 93.
Decormont, stained glass work, A (1) 4.
designers, relation to industry, A (6) 210.
enamelers at Paris International Exhibition, A (2) 56.
Fry, L. A., atomizing process for underglaze color work, A (11) 347.
glass, history of Franz Ruhmann Collection, I, A (4) 137; II, A (6) 215.
Glomi, Italian glass decorator, A (8) 269.
Hoff, Raynor, in Australia, A (6) 209.
Ingrand, Max, glass decorator, A (8) 269.
Lardeur, R., church windows and leaded panels of, A (6) 209.
Manley, Jean, ceramic figures, A (7) 242.
McLaughlin, M. L., porcelain artware, A (7) 243.
pottery, in Holland, A (6) 209.
**Artists** (*continued*)
Robbia, Luca della, Italian terra cotta work, A (11) 347.
Waugh, designs for Steuben glass, A (6) 210.
Waugh, Sidney, glass medallion, A (8) 269.
Willems, J., china modeler, A (7) 243–44.
**Asbestiform minerals** of sepiolite and palygorskite, studies, A (9) 313.
**Ashes,** coal ash, effect of ash-softening temperature and composition, A (4) 153.
coal ash, effect on boiler refractories, A (5) 186.
coal ash, synthetic, effect of $Na_2O$, CaO, and MgO on ash-fusion temperature, B (5) 173.
fuel-oil, in Navy, chemical composition, A (8) 280.
volcanic, distribution, A (10) 339.
**Atmosphere,** controlled: damage to muffles, A (8) 287; in furnaces, developments, A (11) 362; purification of gases, A (11) 362.
**Atmosphere composition,** effect on hot steel, control, A (4) 149.
**Atom,** nucleus, A (3) 120.
**Atomic constitution** of glass, A (10) 325; see also *Glass, chemical composition.*
**Atomic packing models** of common silicate structures, A (5) 199.
**Atomic structure** of minerals, B (6) 231.
**Atomizer apparatus,** P (2) 79.
**Attapulgite,** clay type, structural formula, A (8) 290; Kerr classification questioned, A (8) 288.
**Attapulgus clay,** data, A (1) 35.
**Attrition tests** on road metals by Deval, Lovegrove, and Los Angeles attrition machines, A (4) 142.
**Auerbach method** for scratch hardness, A (1) 1.
**Autoclaves** for alkali determination, A (1) 42; see also *Clayware apparatus.*
**Automatic control,** elements, A (5) 193.
**Ayers, E. M.,** silica sand business, A (10) 343.

**Babinet compensator** for stress measurements on glass rods, III, A (9) 305.
**Baddeleyite** for zirconium-oxide refractories, process, A (11) 354.
**Baffle apparatus** for separating dust from air, P (6) 227; separating dust from gases, P (6) 227.
**Balances** for grinding or polishing wheels, P (1) 3.
magnetic, construction and operation, B (11) 365.
method and apparatus for grinding wheels, P (11) 346.
simple spring-torsion type, A (6) 226.
**Barite,** flotation, for quartz extraction, A (2) 82.
sources: N. C., A (3) 115; Tenn. Valley, concentration tests, A (6) 230.
**Barium** and calcium sulfate, production, P (9) 317.
coefficient of expansion, A (7) 263.
**Barium aluminates** from barium carbonate and alumina in solid state, A (2) 85.
**Barium carbonate** for efflorescence prevention on brick, A (11) 353.
and ferric oxide, reactions between, in presence of oxygen, A (10) 342–43.
and strontium carbonate, enantiotropic transformation, II, A (11) 366.
**Barium compounds,** production, P (3) 121; barium minerals, B (1) 40.
**Barium fluosilicate,** production, P (3) 121.
**Barium oxide-clay-silica system,** cone deformation study, A (9) 315.
**Barrel burnishing,** detailed data, I–VIII, A (4) 148; IX, A (1) 27.
**Barrett and Taylor method** for flow characteristics of glass and slags at high temperatures, discussion, A (7) 247.
**Baryta glass.** See *Glass, optical.*
**Barytine** for iridescent enamels, A (1) 7.
**Base exchange** in clays, methods for determination, A (6) 230.
**Base-exchange capacity** of minerals *vs.* crystal structure, relation, A (11) 364.
**Base-exchange compounds** and soluble salts, chemical equilibrium, A (8) 288.
**Base-exchange studies** on synthetic alumina-silicate materials, II, A (3) 118.
**Batch mixing,** traveling scale for accuracy, A (11) 359.
**Bathtubs.** See *Sanitary ware.*
**Baum-type coal-washing jig,** data, B (6) 229.
**Bauxite** as absorbent for percolation filtration, A (6) 229.
and aluminum, Bur. Mines Rept., B (11) 357.
**Bauxite** (*continued*)
bauxite clays as chemical raw material, A (9) 313.
bauxite-gypsum mixtures for preparation of alumina and sulfur dioxide, A (1) 21.
beryllium in, determination, A (6) 229.
böhmite in, A (3) 119; boehmite, gibbsite, and diaspore types, studies, A (10) 339.
and clay, rolled pebbles in, explanation, A (4) 157.
ferruginous, blast-furnace fusion, A (2) 70–71.
iron (Fe) compounds in, process, P (11) 357.
Kobakor, for aluminum oxyhydrate, A (1) 2.
mineralogy and chemistry, A (3) 119.
residual slime in, use, A (11) 365.
Séailles process for alumina production, A (5) 185.
and serpentine, analyses, A (7) 261.
sodium-sulfate disintegration, A (2) 70.
sources of: Ark., organic matter, origin and nature, A (5) 197.
French, characteristics, A (5) 197.
Greek, crystalline structure and decomposability, A (11) 363.
Russia, deposits and origin, B (6) 232.
Turkestan mountains, A (3) 115.
world deposits and mining, A (7) 263; world resources and classification, A (1) 40.
treatment, P (10) 332.
**Bearings,** ball or roller, lubrication, A (1) 29.
copper-lead, from metal powder, A (1) 28.
**Behrens dithizone method** for lead determination, A (11) 359.
**Beidellite** (beidellite clay), commercial developments, A (4) 156.
Putnam, expansion-contraction curve, A (4) 158.
**Beilby amorphous layer theory** of polishing metals, A (11) 346.
**Beilby layer,** metal polish layers, data, A (7) 240; polishing, surface flow, and formation, IV, A (3) 92.
**Belite** in Portland cement clinkers, occurrence, III, A (4) 133.
**Beneficiation** of common clays, A (7) 261.
**Bentonites,** bibliography on properties and use, A (5) 196.
characteristics, properties, and uses, A (10) 338.
classification and composition, A (8) 288; definition and method of classification proposed, III, A (4) 158–59.
for clay products to increase density and decrease weight, A (3) 115.
clays, and "ammonium-calcium" permutites, thermal decomposition, A (8) 292.
"imbibition bottle," apparatus for tests, A (4) 155.
in industry, A (2) 82.
sources of: India, properties contrasted with American bentonite, A (5) 197.
Italy, A (6) 229; chemical and physical properties, A (1) 37.
Japan: analysis and uses, A (3) 115; use, A (4) 155.
Ordovician, stratigraphy in Va., A (3) 116.
Tétény, data, A (5) 198.
and vermiculite in Tenn. Valley region, B (4) 159.
Wyo., characteristics and use, A (5) 196.
Yamagata: imbibing behavior of cylindrical pieces, application to practical grading, III, A (4) 158–59; nature and constitution, I, A (2) 83.
strong fireproof films from bentonite clay, A (9) 314.
and sub-bentonite, activation, P (10) 341.
**Beryl** and albite, contemporaneous crystallization *vs.* replacement, A (5) 196.
**Beryllium** (glucinium) and aluminum, determination, A (5) 199; separation from aluminum, process, P (5) 203.
in bauxites, method of determination, A (6) 229.
developments, A (8) 289; manufacture, P (9) 315; prospecting, A (4) 158.
–Fe, compounds, A (2) 87.
intermetallic compounds, with iron, A (2) 87.
magnesium, etc.: apparatus for separation, P (8) 292; compounds, iron-free, P (9) 317.
minerals and properties, A (3) 115–16.
**Beryllium compounds,** preparation, P (10) 343.
**Beryllium fluorides,** alkali-metal types, manufacture, P (10) 343.

**Beryllium ores,** treatment, P (10) 341.
**Beryllium oxide,** Italian deposits, A (2) 60.
for refractories, melting point, A (8) 289.
**Bibliographies** (literature references), alkali oxide–CaO–$SiO_2$–$CO_2$, A (5) 202, A (6) 234.
bentonite, A (5) 196.
British pottery materials, geology, A (7) 261.
cements, hydration, A (5) 173; Ferrari cements, A (9) 298.
ceramic and construction materials, high-frequency technique, A (11) 365.
chemical equilibrium between soluble salts and base-exchange compounds, A (8) 288.
clay structure, A (7) 261.
clays, particle-size groups, and base-exchange phenomena of HCl extracts of soils, A (9) 314.
clayware (heavy ceramics), 1936 review, A (3) 103.
coal, mineral constituents and removal, A (11) 362.
coal, U. S. Bur. Mines, 1910–1935, B (1) 34.
complex silicates of magnesium, calcium, strontium, and barium, A (8) 289.
corrosion and corrosion-resistant metals and alloys, A (4) 149.
enamels, changes in cast iron on enameling, A (11) 348.
enamels, progress in 1936, A (11) 349.
flotation, B (8) 286.
gases, microanalysis, A (8) 283.
gels, A (4) 162.
geology in North America, 1935–1936, B (5) 198–99.
geology (Wigan District), B (11) 364.
glass, art of production, B (9) 305.
breaks in flat glass, A (8) 272.
decolorizing, A (1) 11.
infra-red and ultra-violet absorption, A (11) 350–51.
oxygen-releasing compounds, A (6) 214.
special types for lighting, A (1) 14.
tank furnaces, glossary of glass furnace terms, French-English-German, B (1) 15.
thermal endurance, A (4) 137, A (4) 139.
in vacuum technique, A (2) 63.
X-ray tests, A (5) 181.
grinding and crushing, B (8) 286; laws, A (2) 51.
heat conduction, A (2) 81.
lithium in glass and ceramics, A (11) 351.
metal spraying, A (6) 226.
mineral lazulite, types of deposit, A (1) 38.
minerals, nonmetallic, froth flotation and agglomerate tabling, A (4) 150.
minerals and rocks, industrial types, B (11) 364–65.
refractories, cast sillimanite for glass pots, A (2) 69–70.
refractories in iron and steel industry, A (11) 356.
refractories, materials, A (3) 103.
refractories, silica brick, A (8) 281.
silicate chemistry, A (1) 39.
silicate minerals and rocks, A (2) 86.
silicates: complex, A (8) 289; natural, A (1) 36.
silicates, pneumatolytic and hydrothermal alteration and synthesis, A (1) 39.
solutes in silica gel, A (7) 264.
steam contamination, A (8) 293.
strontium minerals, B (1) 40–41.
thermal apparatus, A (4) 152.
weight lifting by industrial workers, relation to accidents, B (9) 319.
welding, heat effect, review to 1937, A (3) 97.
welding, review to 1937, A (1) 9, A (5) 175; in 1937, A (10) 325.
**Bicalcium silicate,** analysis, A (8) 291.
**Binary liquid mixtures,** molecular clustering, A (3) 119–20.
**Bingham plastometer,** modification, A (3) 111.
**Biographies,** Ayers, E. M., A (10) 343.
Binns, C. F., A (6) 236.
McLaughlin, M. L., porcelain artware, A (7) 243.
Mellor, J. W., A (8) 293
Owens, M. J., A (5) 179.
Schott, Otto, place in optical glass development, A (5) 177.
Tone, F. J., A (10) 344.
Wells, W. E., A (2) 89.
**Biotite,** disintegration and transformation, A (1) 36.
**Bivalent metals,** fused chlorides of, behavior of enstatite, A (6) 232.
**Blast-furnace slags.** See *Slags.*
**Blast furnaces.** See *Furnaces; Refractories for furnaces.*
**Blast gun,** water-sand type, P (1) 32.
**Blasting apparatus,** active list, B (5) 194; Annual Rept., 1937, B (7) 266; multi-rotary blasting table for foundries, A (1) 2; see also *Explosives; Mining.*
**Bleaching clays.** See *Clays.*
**Bleaching tests,** acid leach and oil bleach tests, A (11) 363.
**"Bloch Rosetti,"** laboratory grinding mill for enamels, A (3) 97.
**Boehmite,** analogy of powder pattern, A (9) 314.
**Boehmite bauxite,** studies, A (3) 119; A (10) 339.
**Boiler plants,** electrical meters for combustion control, A (4) 153.
**Boilers.** See also *Furnaces, boiler; Refractories for boilers; Refractories for furnaces.*
action of fuel-oil ash on refractory linings, A (8) 280.
A.S.M.E. Boiler Code, review of changes, A (7) 265.
bent-tube, steam-generating unit for, A (7) 266.
boiler tubes, circulation in, A (7) 265.
high-pressure steam, evaporators for, A (7) 265.
water-tube, secondary air in combustion chamber, test, A (11) 361.
**Boliden and I.C.I. processes** for sulfur removal from combustion gases, A (3) 113.
**Bonds** (binders). See also *Abrasives, bonded; Coatings; Glass, safety; Jointing materials.*
adhesives for polishing wheels, A (8) 267.
cement *vs.* glue for polishing wheels, A (9) 295.
ceramic, for abrasive disk, composition, A (8) 267.
china clay as filler in rubber compounding, A (10) 338.
ethyl-silicate preparation for refractories, A (4) 131.
ethyl-silicate solutions and partially hydrolyzed silicic-acid ester, A (2) 69.
hydraulic, theory, A (2) 56.
latex for ceramic ware, P (9) 319.
Nuglu, for abrasives, A (8) 268.
for powdered or granular minerals, P (5) 190.
for sintered grinding wheels, tearing resistance, effect of clays, A (2) 51.
spinel, for chromite refractories, A (5) 189.
**Bone china.** See *Chinaware.*
**Books (booklets, bulletins),** Abrasive handbook: grinding of metals, I; polishing of metals, II; grinding and polishing of wood, III; grinding and polishing of glass, stone, leather, etc., IV, B (1) 2–3.
Abrasive materials (*Bull.*), B (11) 346.
Abrasives and abrasive products (*Bull.*), B (10) 321.
Active list of permissible explosives and blasting devices to June, 1937 (*Bull.*), B (5) 194.
Alignment charts, their construction and use (*Bull.*), B (1) 45.
A.S.T.M. tentative standards, 1937, B (5) 204.
Analytical chemistry of tantalum and niobium, B (9) 317.
Annual Rept. of Explosives Div., 1937 (*Bull.*), B (7) 266.
Annual Rept. of Metallurgical Div. (*Bull.*), B (5) 175.
Annual Rept. of Nonmetals Div., 1937 (*Bull.*), B (2) 83.
Annual rept. of research and technologic work on coal, 1937 (*Bull.*), B (6) 229.
Application of potash in ceramic industry, B (3) 93.
Application of statistical methods to industrial standardization and quality control, B (1) 47.
Applied fluid mechanics, B (6) 227.
Art of glassmaking, B (9) 305.
Atomic structure of minerals, B (6) 231–32.
Ball-mill grinding (*Bull.*), B (7) 258.
Barium minerals, B (1) 40.
Bauxite and aluminum (*Bull.*), B (11) 357.
Bauxites: Vol. I, Part II, B (6) 232.
Beneficiation of spodumene by decrepitation (*Bull.*), B (4) 159.
Bibliography of North American geology for 1935 and 1936, B (5) 198–99.
Bibliography of U. S. Bur. Mines investigation on coal and its products, 1910–1935 (*Bull.*), B (1) 34.
Brickmaking cyclopedia, B (10) 329.
**Books (booklets, bulletins)** (*continued*)
Brown-Firth Research Lab., B (7) 249.
Bureau of Mines Haldane gas-analysis apparatus (*Bull.*), B (11) 361.
Bureau of Mines midget impinger for dust sampling (*Bull.*), B (5) 194.
Bureau of Mines and mineral utilization (*Bull.*), B (7) 263.
Burning of coal and coke treated with small quantities of chemicals (*Bull.*), B (2) 81.
California mineral production (*Bull.*), B (10) 341.
Carbon brushes, B (3) 123.
Carolina kaolin, B (4) 159.
Cemented carbide tools engineering bulletin, B (9) 311.
Ceramic data book, B (9) 319.
Ceramic engineering as career, B (4) 165.
Ceramic industrial materials, B (2) 90.
Chemistry of anhydrous chlorides of chromium, a thermodynamic investigation (*Bull.*), B (1) 40.
Chromite (*Bull.*), B (3) 106, B (9) 315.
Chromite deposits of Bushveld igneous complex (*Bull.*), B (3) 117.
Classification and selection of Ill. coals (*Bull.*), B (2) 90.
Clay resources of TVA region (*Bull.*), B (4) 159.
Clays: kaolin (china clay and paper clay), ball clay, fire clay, bentonite, fullers' earth (bleaching clays), and miscellaneous clay (*Bull.*), B (3) 117, B (11) 364.
Coal seams of North Staffordshire: ceramic utilization, B (1) 34.
Colloid systems, B (9) 317.
Color analysis of Portland cement concrete (*Bull.*), B (8) 286.
Comprehensive treatise on inorganic and theoretical chemistry: Vol. 16, Pt and general index, B (4) 164.
Concentration of low-grade magnesite ores by flotation, B (11) 364.
Control of dust from blasting by spray of water mist (*Bull.*), B (7) 258.
Course in glassmaking: I, chemistry of glass; II, thermal physics of glass; III, annealing glass, its working; physical properties of cold glass, B (3) 101.
Course in physical chemistry of glass, B (8) 276.
Crushing and grinding (*Bull.*), B (8) 286.
Crystal gazing (American patent system), B (4) 166.
Damp-proof courses for brickwork structures (*Bull.*), B (1) 18.
Descriptive petrography of igneous rocks, IV, B (8) 290.
Design in pottery industry, B (2) 54.
Development of pyrophyllite refractories and refractory cements (*Bull.*), B (4) 146.
Dewatering and drying of coal (*Bull.*), B (10) 337.
Diffusion and chemical reaction in solid phase, B (8) 292.
Drilling mud: its manufacture and testing, B (4) 166.
Drying and duration of firing, B (3) 113.
Dust hazards and their control in mining (*Bull.*), B (1) 47.
Dust sampling with Bur. Mines midget impinger, using new hand-operated pump (*Bull.*), B (7) 258.
Economic geology, B (8) 290; Economic geology of central coal field: area I, B (7) 263.
Effect of angle of drilling on dust dissemination (*Bull.*), B (7) 266.
Effect of $Na_2O$, CaO, and MgO on ash-fusion temperature using synthetic coal ash (*Bull.*), B (5) 173.
Efficiency of impingers for collecting lead dust and fumes (*Bull.*), B (11) 361.
Efflorescence and staining on brickwork (*Bull.*), B (1) 18.
Elasticity, plasticity, and structure of matter, B (6) 235.
Electrical insulation materials: development, manufacture, uses, B (4) 148.
Enameler's dictionary, B (4) 136.
Engineer's year-book of formulas, rules, tables, data, and memoranda for 1937: compendium of modern practice of civil, mechanical, electrical, marine, gas, aëro, mine, and metallurgical, B (2) 90.
Feldspar (*Bull.*), B (3) 117, B (9) 315.
Feldspar as constituent of glass, B (4) 140.
Field tests for minerals, B (4) 159, B (11) 364.
Flotation of langbeinite from potash field of N. Mex. and Tex. (*Bull.*), B (4) 159.
Fluorspar and cryolite (*Bull.*), B (9) 315.

**Books (booklets, bulletins)** (*continued*)
Fluorspar industry of U. S. with special reference to Ill.-Ky. district, (*Bull.*), B (11) 364.
Friability of Ala. coals (*Bull.*), B (7) 260.
Fuel efficiency in cement manufacture, 1909–1935, B (10) 337.
Fundamental research, B (4) 166.
Geology of Wigan District, B (11) 364.
Glass in architecture and decoration, B (9) 305.
Glass and jewelry, B (7) 244.
Glass tank furnaces, B (1) 15.
Glazed tile from a palace of Rameses II at Kantir, B (6) 210.
Graphic routes to greater profits, B (9) 319.
Graphs and calculations in ceramics, B (7) 264.
Gravimetric analysis: laboratory manual with special reference to analysis of natural minerals and rocks, B (4) 164.
Grindability of coals mined in U. S., Canada, and other countries (*Bull.*), B (4) 154; Grindability of Ala. coals (*Bull.*), B (7) 260.
Grindability and grinding characteristics of ores (*Bull.*), A (6) 225.
Gypsum, anhydrite, celestine, and strontianite, B (11) 364.
Handbook of glass painting, B (8) 276.
Handbook of northern Ariz. pottery ware, B (6) 210.
Handy grind catalogue, B (9) 295.
Heat transfer of porcelain enamel metals and other materials (*Bull.*), B (9) 301.
Henley's Twentieth Century book of formulas, processes, and trade secrets, B (4) 130.
History of faience; Egyptian tile of 3000 years ago, B (1) 4.
How to increase your sales, B (3) 98.
Hydroxides and oxyhydrates, B (6) 235.
Industrial art in England, B (2) 54.
Industrial chemical calculations: application of physicochemical principles and data to problems of industry, B (1) 45.
Industrial dust, B (4) 166.
Industrial minerals and rocks (nonmetallics other than fuels), B (5) 199, B (11) 364–65.
Insulating materials, B (10) 333.
Laboratories that make assays, analyses, and tests on ores, minerals, and other substances (*Bull.*), B (8) 294.
Lead frits and fritted glazes (*Bull.*), B (1) 26.
Linear expansion of various ceramic products between the ambient temperature and 1000°C, B (7) 260–61.
List of respiratory protective devices approved by U. S. Bur. Mines (*Bull.*), B (6) 227.
Magnesite and other magnesium compounds (*Bull.*), B (3) 106, B (9) 315; Magnesite as refractory, B (4) 146.
Manual of A.S.T.M. standards on refractory materials, B (2) 78.
Manual of porcelain enameling, B (2) 59.
Manufacture of porcelain, practical experience, B (8) 283.
Market for Columbia River hydroelectric power using northwest minerals: magnesia, I; silica, II; limestone, III; northwest clays, IV, B (6) 238.
Marketing clay (*Bull.*), B (7) 263; Marketing mica (*Bull.*), B (7) 263.
Martin ware: catalogue of Nettlefold Collection, with history of R. W. Martin & Brothers, B (3) 93.
Measuring instruments in industrial work, B (4) 153.
Medieval English paving tiles, B (6) 210.
Methods and costs of mining and crushing gypsum at Victor Plaster, Inc., mine (*Bull.*), B (3) 95.
Methods for estimating grindability of coal (*Bull.*), A (11) 362.
Methods for protection against silicosis and when they are justified (*Bull.*), B (7) 266.
Microprojection method for counting impinger dust samples (*Bull.*), B (6) 238.
Mineral composition and origin of Mo. flint and diaspore clays (*Bull.*), B (1) 40.
Mineral physics studies (Metallurgical Div. Progress Rept., No. 3), B (11) 365.
Mineral position of British Empire, 1935, B (1) 40.
Mineral raw materials, B (1) 40.
Mineral resources of Ohio (*Bull.*), B (7) 263; Mineral resources of Tenn. (*Bull.*), B (4) 159.
Mineral thermometer (*Bull.*), B (10) 336.
Mineral wool (*Bull.*), B (6) 217.

**Books (booklets, bulletins)** (*continued*)
Minerals yearbook, 1938, B (11) 365.
Mines register, 1937, Vol. XIX, B (4) 159.
Mining and grinding methods and costs at Malvern Clay Co. mine, Malvern, Ohio (*Bull.*), B (2) 90.
Mining yearbook, 1938, B (8) 290.
Minor nonmetals, carbon dioxide, graphite, greensand, kyanite, lithium minerals, meerschaum, mineral wool, monazite, olivine, strontium minerals, and vermiculite (*Bull.*), B (3), 117, B (11) 365.
Modern fine glass, B (5) 181.
Modern glassworking and laboratory technique, B (6) 217.
Modern refractory practice (Harbison-Walker Refractories Co.), B (3) 106.
National Silicosis Conference: summary reports submitted to the Secretary of Labor by conference committees, Feb. 3, 1937 (*Bull.*), B (6) 238.
Nature and properties of soils, college text of edaphology (*Bull.*), B (1) 40.
Negative adsorption and steam pressure isotherms in permutites and clays (*Bull.*), B (3) 117.
Nepheline syenite from Ont. (*Bull.*), A (11) 364.
Nonmetallic mineral resources of eastern Ore. (*Bull.*), B (1) 40.
Notebook for glass, ceramics, enamel, and cements, 1938, B (8) 294.
Oil burners, B (3) 113; Oil burning, B (3) 113; Oil fuels and burners, B (3) 114.
Old Wedgwood, B (4) 130.
Ore dressing studies: (*A*) use of wetting agents in flotation; (*B*) flotation of complex molybdenum-vanadium ores from Ariz.; (*C*) short-column hydraulic elutriator for subsieve sizes (*Bull.*), B (6) 227.
Ore-testing studies, 1936–1937 (*Bull.*), B (9) 315.
Outline of geological history of Hyderabad State and its mineral resources (*Bull.*), B (10) 341.
Paestan pottery, B (10) 323.
Performance of Baum-type coal-washing jig (*Bull.*), B (6) 229; Performance of a pulsator-type coal-washing jig (*Bull.*), B (6) 229.
Permissible electrically operated post drills and drilling machines (*Bull.*), B (8) 286.
Petrographic identification of atmospheric dust particles (*Bull.*), B (6) 238.
Petrography and heat treatment of chromite refractories, B (1) 24.
Physico-chemical bases of glass industry, B (10) 327.
Physics in industry, symposium, B (6) 232.
Physics for technical students: mechanics and heat, B (6) 235.
Pottery of the ancients, B (9) 297.
Pozzuolanic cements: Theory of hardening of lime-pozzuolana cements, B (1) 6.
Practical system for control of quality of fire clay (*Bull.*), B (11) 357.
Preparation of thin sections of coal (*Bull.*), B (11) 362.
Primary crushing: Progress Rept., Nos. 1 and 2 (*Bull.*), B (7) 258; No. 3 (*Bull.*), B (8) 286.
Principles of chemical engineering, B (9) 319.
Proceedings of 40th Annual Meeting, A.S.T.M., Vol. 37, 1937: I, Comm. repts. and tentative standards; II, technical papers, B (7) 266.
Production of castings for porcelain enameling, B (1) 10.
Properties of matter, B (1) 45.
Protection of labor in glass industry, B (2) 90.
Protection against mine gases (*Bull.*), B (1) 47.
Purification of clay (*Bull.*), B (7) 263.
Reactivity of solids, B (4) 164.
Recovery of selenium and tellurium at Copper Cliff, Ont. (*Bull.*), A (11) 364.
Refractories from metallurgical viewpoint, B (1) 24.
Refractories for miscellaneous foundry furnaces, special reference to insulation (*Bull.*), B (10) 331.
Refractory construction materials, B (9) 308.
Refractory mortars; coating and ramming materials for foundry (*Bull.*), B (7) 255.
Relation of dust concentration to depth of hole during wet drilling (*Bull.*), B (7) 266.
Relative value of gypsum and anhydrite as

**Books (booklets, bulletins)** (*continued*)
additions to Portland cement (*Bull.*), B (1) 6.
Renaissance of physics, B (4) 164.
Rept. of Building Research Board, 1936, B (9) 319.
Rept. of Comm. on Sedimentation, 1936–37 (*Bull.*), B (7) 263.
Rept. of Fuel Research Board, 1936, B (3) 114.
Repts. of progress of applied chemistry, B (2) 90.
Results of first-aid training of all employees of mine or plant (*Bull.*), B (1) 47.
Results of recent research on control or prevention of silicosis (*Bull.*), B (7) 266.
Résumé of research and technologic work on coal at Bur. Mines, 1936 (*Bull.*), B (3) 114.
Review of literature on conditioning air for advancement of health and safety in mines (*Bull.*), B (8) 294.
Review of literature on effects of breathing dusts with special reference to silicosis (*Bull.*), B (4) 166.
Roman glass from Karanis, B (2) 54.
Rutile in Brazil, occurrence, composition, and treatment (*Bull.*), B (2) 83.
Safety catches and arresting devices for cages, skips, and cars in mine shafts and slopes (*Bull.*), B (8) 294.
Scandinavian archaeology, B (4) 130.
Secondary expansion in refractory clays (*Bull.*), B (8) 281.
Silicosis hazard in American industry (*Bull.*), B (3) 123.
Slagging action of western Pa. coals on different types of refractories in small pulverized coal installation (*Bull.*), B (1) 24.
Smoke abatement (*Bull.*), B (10) 337.
Special methods for concentrating and purifying industrial minerals (*Bull.*), A (11) 364.
Spectrum analysis with carbon arc cathode layer (*Glimmschicht*), B (10) 341.
Sprechsaal yearbook, 1937, B (4) 166.
Stabilization of reflectance and color of recoat enamels (*Bull.*), B (9) 301.
Stained glass of 12th and 13th centuries from French cathedrals, B (8) 270.
Stained glass of Yorkminster, B (8) 270; Stained and painted glass in England, B (6) 210–11.
Stained glass craft: adventures in light and color, B (3) 93.
Stannic oxide as opacifier in wet enamels (*Bull.*), B (7) 246.
Strontium minerals (*Bull.*), B (1) 40–41.
Structure of natural wollastonite (*Bull.*), B (3) 117.
Subject index to periodicals, 1936, B (4) 166.
Summary of progress of Geological Survey of Great Britain, 1936, I, B (2) 83.
Symposium on radiography and X-ray diffraction methods, 1936, B (6) 235.
Symposium on silicosis, B (9) 319.
Talc, pyrophyllite, and ground soapstone, B (11) 365.
Technique for routine use of konimeter (*Bull.*), B (7) 258.
Technological aspects of patents, B (4) 166–67.
Temperature measurements on glass-melting furnaces, I–III, B (3) 101.
Terra cotta from Afrasiab (*Bull.*), B (10) 323.
Test for acid resistance of porcelain enamels (*Bull.*), B (4) 136.
Thermal conductivity of building materials, B (10) 329.
Thorpe's dictionary of applied chemistry: Vol. I, A–Bi, B (4) 164.
Titanium on coast of Espiritu Santo (*Bull.*), B (2) 83–84.
Trend of flotation, B (8) 286.
Use and care of respirators (*Bull.*), B (10) 344.
Use of high-alumina cements in structural engineering, B (7) 245.
Variables in coal sampling (*Bull.*), A (11) 362.
Vermiculite and bentonite in Tenn. Valley region (*Bull.*), B (4) 159.
Wearing properties of metals in clay plant operation: I, pug-mill knives, muller tires, runner plates, and screen plates (*Bull.*), B (8) 286.
Weight lifting by industrial workers, B (9) 319.
Willson products for industrial safety, B (7) 258.
Wonderstone (*Bull.*), B (3) 117.

**Books** (booklets, bulletins) (*continued*)
Younge site: archeological record from Mich., B (6) 211.
**Borates,** borate compound preparation, P (1) 45.
borate minerals, hydrous, treatment, P (1) 45.
borate transformation, studies, A (9) 316.
fusing process, P (10) 336.
heating curves, A (9) 316.
natural, specific weight and hardness and effect of heat, A (9) 317.
perborates and polyborates, constitution, VII, A (2) 84.
**Borax** and boric acid: detailed uses, A (1) 41; from kernite raw material, A (1) 35.
in ceramic ware, properties of borax minerals, A (1) 35.
and kernite in Calif., A (10) 340.
production, P (3) 121; granular, production, P (7) 264.
**Boric acid** and alkaline boric acid salts: comments on constitution of perborates and polyborates, VII, A (2) 84.
borax, or phosphates, melting processes, P (6) 235.
density of aqueous solutions and apparent molecular volume of boric acid in them, A (2) 84.
production, P (3) 121; purification, P (6) 235–36.
and silicic acid, qualitative test, A (3) 120–21.
**Boric oxide** for technical glasses, data, A (2) 66, A (4) 139.
**Boride crystals** for producing ferrous alloys, A (10) 334.
**Boron** and fluorine, refractive indices and dispersions of volatile compounds, A (4) 162.
modified flame test, A (10) 342.
in potassium salts, chemical constitution, A (1) 39.
Pyrex-brand or Jena glass vessels for quantitative determinations, A (6) 217.
**Boron carbides.** See *Abrasives.*
**Boron oxide** (boric anhydride)–PbO–$SiO_2$, for "soft" glazes, A (4) 130.
molten, solubility of oxides, A (7) 264.
**Borosilicate** in enamels, use, P (6) 214.
**Borosilicate glass.** See *Glass.*
**Boswell classification** for foundry sands, A (11) 348.
**Bottomley method** for vitreous-silica production, A (5) 180.
**Boyer method** for manufacture of aluminum oxyhydrate from bauxites, A (1) 2.
**Bragg** cited on clay groups, A (9) 313.
**Bragg oscillating spectrograph** for clay mineral study, A (1) 37.
**Briceseo tunnel kilns,** A (3) 112.
**Brick.** See also *Building materials; Clayware; Drying; Firing; Paving materials; Refractories; Structural materials; Tile.*
absorption rates and mortar for, A (9) 316.
acidproof, and sulfur cement joints for steel tanks, A (10) 332.
artificial drying, A (11) 359.
$BaCO_3$ for efflorescence prevention, A (11) 353.
black, firing, P (4) 154.
brickwork piers, strength tests, A (9) 307.
British, for railway engineering and maintenance, A (3) 103.
building, clay and shale, water penetrability of, studies, A (7) 252.
for building purposes, P (9) 307.
cavity, for buildings, P (10) 329.
clays for, rehydration, A (2) 68.
colored, method and apparatus, P (6) 223; coloring, engobes for, A (5) 184.
defects, brick flaws, A (7) 252.
crack formation: prevention, A (1) 17; in dry-pressed ware, A (2) 68.
from drying, A (11) 359.
efflorescence: on hollow brick, cause, A (2) 81; source and prevention, A (11) 353; and staining, wick test, B (1) 18; studies, A (6) 219–20.
rattler test, relation to service, A (6) 220.
scumming, causes and cure, A (4) 142.
dry-pressed, crack formation, A (2) 68.
dry-pressed, Ukrainian clays for, A (1) 39.
efflorescence. See *Brick, defects.*
electrical and thermal properties, correlation, A (4) 141–42.
engobe coating, automatic spraying nozzle, P (11) 361.
firing, charging green brick in circular kilns, A (4) 153.
freezing test for strength, A (5) 184.
**Brick** (*continued*)
fuel-economizer brick, for open fireplace grates, P (1) 25.
hacking method for unit handling, P (3) 103.
hollow, dimensions, P (7) 252.
"hourdis," difficulties in drying, A (7) 257.
lightweight, with foamy structure, data, A (5) 184.
manufacture, P (11) 353.
for paving. See *Paving materials.*
permeability data, A (5) 184.
physical properties, effect of manufacturing process, A (5) 184.
plastic, machine for surface treatment, P (2) 68.
porosity data, A (5) 184.
porous, coal in, A (11) 352–53.
properties, A (7) 252; properties and effective use, A (11) 353.
for railways, selection and tests, A (3) 103.
reinforced, for paving blocks, A (5) 184.
and riprap for fusion material, A (10) 329.
and roof tile, glazing, engobing, and "smoking" studies, A (5) 190; roofing, blue smoking of, A (2) 75.
sand-lime, autoclaved, kinetics of carbonation processes, A (1) 17.
sand-lime, combined preparation and press equipment for occasional production, P (11) 353.
sand-lime: relation of calcium silicate cements, A (8) 279; silicate formation, A (10) 329.
sand-lime, strength, water absorption, and freezing and thawing resistance, A (4) 142.
"semidry" process, A (5) 184.
from slate débris, use, A (6) 229.
solid, standards for tests and regulations, A (7) 252.
soluble salts in, effect, A (3) 103.
strength of, freezing test, A (5) 184.
or tile, flashing, P (7) 257; and tile, plastic materials, treatment, P (8) 282; see also *Tile.*
tunnel kilns for, A (10) 337; see also *Firing.*
vehicles and operating methods for hauling, A (7) 258; II–III, A (10) 335.
vitrified: production in ordinary brickworks, A (9) 306; setting, A (11) 353.
volume tests, device for, A (9) 310.
water-absorption tests, A (9) 306.
wet- and dry-ground handmade and machine-pressed, studies, A (5) 184.
**Brick apparatus.** See also *Clayware apparatus,* and specific types for production of clayware.
automatic molding machine, A (1) 27.
automatic temperature regulator for brick driers, A (1) 27, A (4) 152.
for brick roughening, P (1) 18.
briquetting machine, P (5) 194.
central lubrication under pressure, A (2) 78.
for cutting brick, P (8) 279.
for economic handling, A (5) 184.
for molding ventilating or hollow brick, P (3) 112.
patent designs, P (4) 153, P (9) 311.
for repress brick molding, P (1) 32.
for roughening brick, P (4) 142.
for rustic brick, P (1) 18.
sanding attachment, P (7) 252.
for separating hollow brick from clay rod, and closing brick, P (3) 103.
skip for handling brick stacks, P (1) 18.
for surface treatment of brick in plastic state, P (2) 68.
and tile machine, P (3) 103.
for unloading from Hoffman kiln, A (1) 33.
vehicles for hauling, A (7) 258.
**Brick industry,** brickmaking cyclopedia, B (10) 329.
in U.S.S.R., review, A (6) 220.
**Brick plants,** electrical power transmission, A (8) 284.
Essex Brick Co., Ltd., Childerditch works, A (5) 184.
grinding and mixing of clay, loam, and grog in, A (8) 284.
**Brill method** for alkaline-earth metal determination, A (7) 263.
**Brittain pipe testing machine,** A (3) 111.
**Brown-Firth Research Lab.,** B (7) 249.
**Brownmillerite,** studies, A (4) 163.
**Brownmillerite (Ferrari) cements,** data, A (9) 298.
**Bubble formation** in glass, studies, A (1) 10.
**Bubble method.** See *Maximum bubble pressure (Jaeger) method.*
**Buffing,** compositions, P (8) 268; test methods, A (7) 239; see also *Polishing.*
**Buffing apparatus.** See also *Grinding apparatus; Polishing apparatus.*
**Buffing apparatus** (*continued*)
buffing or polishing wheel, P (5) 170, P (10) 322.
fibrous buff, P (5) 170.
knitted buffing wheel, P (5) 170.
patent design, P (1) 3; and method, P (4) 128.
section unit and assembly, P (4) 128.
wheels, production, P (2) 52, P (3) 92, P (9) 295; ventilated type, P (5) 171.
**Building materials.** See also *Architecture; Brick; Clayware; Flooring materials; Masonry; Roofing materials; Structural materials; Tile.*
brick, P (9) 307.
brickwork piers, strength tests, A (9) 307.
building tile, P (5) 184.
ceramic, scientific manufacture, A (5) 198.
decorative, use of diatomite rock impregnated by Na-silicate solutions, A (6) 219.
diatomite and pumice stone, A (3) 115.
diatomite for sound insulation, A (3) 116.
enamels, P (4) 136; see also *Structural materials, enameled.*
fireproof, P (8) 279.
glass, physics of building construction, A (5) 178.
magnesium oxide and magnesium chloride with bond, P (6) 212.
pervious body for acoustic purposes, P (1) 48.
Plasoleum, rubber latex base adhesive for tile, glass, etc., A (4) 165.
porous stone and aging brick in old Colonial houses, protective solution, A (3) 122.
problems of material testing, A (8) 293.
Rept. of Building Research Board, 1936, B (9) 319.
talc refuse for talc cement, porous production, A (11) 347.
**Bullard-Dunn process** for descaling metals, (2) 56.
**Burners.** See also *Furnaces,* and other types of heating apparatus.
closed-system fluent-combustible, ignition apparatus for, P (2) 80.
gas-burner system, classification, A (6) 227.
**Burnishing** for aluminum screw machine products, A (1) 1.
barrel, detailed data, I–VIII, A (4) 148; IX, A (1) 27.
**Bursting pressure test** for glass bottles, A (9) 301.
**Bushings** of oil circuit breakers, porcelain umbrellas for protection, A (11) 358.

**Cables,** porcelain, manufacture, and suitability, A (7) 257.
**Cadmium** as pigment for coloring, A (4) 160.
**Cadmium-selenide red** for pigments, method, P (7) 264.
**Cadmium spot tests,** A (5) 199.
**Calcareous surface clays,** drying characteristics, A (7) 261.
**Calcic feldspar deposits** of Minn., A (2) 82.
**Calcined silicic acid** for insulating buildings, A (7) 248.
**Calcining temperature** of dolomite and quantity of heat evolved by interaction of calcined product with water, relation, A (1) 22.
**Calcite** and aragonite, measurement of proportions in precipitated chalk, A (9) 316.
**Calcite crystals,** single, deformation under high confining pressures, A (5) 196.
**Calcium,** aluminates and aluminoferrites of, effect of mineralizers on synthesis, A (1) 6.
coefficient of expansion, A (7) 263.
microdetermination, A (8) 291.
as sulfate, separation by precipitation in concentrated methanol solution, A (10) 343.
**Calcium borate,** heating curves, A (9) 316.
(veatchite) from Calif., A (10) 341.
**Calcium carbonate** and alumina mixtures, chemical, optical, and X-ray tests, A (2) 87.
effect of calcining temperature on properties of quicklime, A (2) 55.
monotropic conversion, I, A (11) 365–66.
production, P (10) 332.
**Calcium hydroxide,** heat of reaction with kaolin, aluminum hydroxide, and silica, A (2) 85.
**Calcium magnesium silicate**–$MnO \cdot TiO_2$, equilibrium diagram, A (4) 161.
–$CaSiO_3$ and $CaSiO_3$–$Ca_2MgSi_2O_7$, studies, A (10) 340–41.
**Calcium metaphosphate,** production, P (6) 235.
**Calcium oxide**–$Al_2O_3$–$SiO_2$, diagrams, A (6) 234–35; X-ray tests, A (9) 317.
–$Fe_2O_3$, celite in, I, A (4) 163.

**Calcium oxide** (*continued*)
–FeO–$SiO_2$, review of researches and test methods, A (5) 202.
–ZnO–FeO–$SiO_2$, zinc-bearing slags in, fusibility, A (6) 232.
and chrome oxide, reciprocal action on heating, I, A (8) 291–92.
and magnesium oxide, Richards method for determination, A (1) 42.
**Calcium phosphates,** alumina, and potassium, recovery from their insoluble minerals, P (3) 121.
chemical and X-ray diffraction studies, A (10) 342.
**Calcium silicates** and calcium aluminates, reactions with water, A (2) 55.
–$CaMgSi_2O_6$ and $CaSiO_3$–$Ca_2MgSi_2O_7$, studies, A (10) 340–41.
cathodo-luminescence, A (9) 313.
**Calcium sulfate** in clayware, elimination, A (3) 103.
heats of hydration and transition, A (9) 298.
**Calcium sulfate plasters,** types, A (9) 298.
**Calipering apparatus,** P (1) 3.
**Calorimeters** for cement heat-of-hydration measurements, A (10) 323–24.
precision, for natural gas analysis, A (5) 201.
**Calrod heating unit** for tile mold, A (3) 109.
**Calyx drills** for excavating, A (1) 27.
**Cameras.** See also *Photography.*
for low-temperature X-ray diffraction work, A (2) 77–78.
precision powder camera for photographs at high temperatures, A (8) 285.
**Canada,** magnesitic brick production, A (9) 307–308.
**Canadian Guild of Potters,** work of, A (9) 296.
**Caolad flint** in Ireland, A (4) 155–56.
**Capillary condensation,** determination of thickness of adsorbed water film on glass, A (2) 84.
**Capillary systems:** systematics of porous systems, XIX (*a*); pore volume studies in compact and coherent materials, (*b*); effective pore volume in branching canal systems, (*c*); permeability to liquids and gases of canal, skeleton, and network capillary systems, (*d*); permeability to gases of cellulose membranes, etc., (*e*), A (9) 315; types of fluid flow through, XIX (*d*), A (9) 315.
**Carbide tools,** cemented, data, B (9) 311.
**Carbides,** cemented, data, A (11) 350.
**Carbon** in glasses colored by carbonaceous matter, determination, A (1) 42.
and hydrogen, determination of: combustion train for, A (10) 336; microdetermination, A (5) 201.
spectrum of, lines photographed, A (4) 162.
**Carbon brushes** for electrical machinery, B (3) 123.
**Carbon dioxide**–$Li_2O$–$SiO_2$, equilibria in, A (5) 202.
–$K_2O$–$SiO_2$, decomposition pressure-temperature diagrams, A (2) 87; equilibria in, A (5) 202.
**Carbon tetrachloride** and foam type of extinguisher, A (1) 31.
**Carbonate radical,** determination, A (8) 291.
**Carbonation** of lime-sand brick, kinetics of, A (1) 17.
**Carbonization,** low-temperature, of bituminous coal, A (1) 33.
studies, B (3) 114.
**Cast ware,** unicast method for sanitary ware, A (4) 147.
**Casting** of clay pipe, apparatus, P (5) 194.
of gypsum, effect of fineness of grind, A (3) 95.
**Casting properties** of clay slips, A (1) 37–38; see also *Slips.*
**Castings.** See also *Metals; Welding.*
brass and bronze, polishing method, A (7) 240.
cast-iron die types, production, A (1) 7.
heat-resisting alloy types, data, A (6) 225.
spray, Navy tests, A (6) 226.
**Catalyst,** chromium sulfomolybdate, process, P (3) 121.
**Cathodo-luminescence** of calcium silicate, A (9) 313; cathodo-luminescence spectra of feldspars, A (9) 313.
**Catlinite** and Sioux quartzite, A (10) 338.
**Celite** in Portland cement: study of system CaO–$Fe_2O_3$, I; brownmillerite studies, II, A (4) 163.
tests, IV–VII, A (5) 173.
**Celite-type apparatus** for high-temperature thermal insulation tests, A (4) 149.
**Cellular clay products.** See *Clayware, cellular.*
**Cellular refractories.** See cellular, lightweight, and porous references under *Refractories.*
**Cellulose nitrate** and cellulose acetate for grinding wheel bond, A (8) 267.
**Cement apparatus** for manufacture of cement, P (6) 212.
**Cemented carbide tools,** engineering bulletin, B (9) 311.
**Cements.** See also *Gypsum; Mortars; Plasters; Refractories, cements.*
and abrasive article, P (8) 268.
acidproof, quick-setting type, A (1) 5.
for "akarkhite," artificial breccia-like marble, A (6) 211.
alkali-silicate, composition, P (6) 208.
alumina, and corundum for refractory brick, P (9) 308.
alumina and slag, test results, II, A (11) 357.
aluminous: and aluminous slags, blast-furnace fusion of bauxites, A (2) 70–71; process, P (2) 56.
with blast-furnace slag base, effect of colloidal phenomena in study, A (2) 55.
blast-kiln furnace for production, A (2) 55.
calcium-silicate, for sand-lime brick, A (8) 279.
cementitious: from blast-furnace slag, P (10) 324; calcining gypsum for, P (3) 95; manufacture, P (10) 324.
*ciment fondu,* advantages, A (7) 253.
*ciment fondu* as bond for refractory cements, A (2) 72; *ciment fondu* with refractory grog, use, A (4) 143.
clinker: process and apparatus for, P (1) 6; quality determination, A (6) 211; see also *Cements, Portland clinker.*
colliery shale for, P (4) 133.
ethyl silicate preparations and applications, A (4) 131.
Ferrari (brownmillerite cements), characteristics, A (9) 298.
fuel efficiency data, B (10) 337.
*vs.* glue as binding agent in grinding wheels, A (9) 295.
hardening of, electrostatic phenomenon, A (2) 55.
heat of hydration, control, A (1) 6; measurement, A (10) 323–24.
high-alumina, for refractory concretes, A (4) 144–45.
high-alumina: in structural engineering, test methods, B (7) 245; technological properties, A (2) 72.
high-aluminous, comparative tests, A (9) 307.
hydration of, determination of degree, A (5) 173.
hydraulic: in refractory concrete masonry, I–II, A (11) 357; studies, A (9) 298.
hydraulic binding agents, theory, A (2) 56.
hydraulic gypsum, process, P (4) 133.
hydraulic refractory: composition, I–II, A (5) 186–87.
hydraulic refractory: preparation of highly aluminous calcium aluminates, I; change of strength on heating, II; refractory properties of cements and their preparation from natural materials, III, A (4) 131–32.
iron modulus tests, IV–VII, A (5) 173.
jointing, stability under compression and tension at 1300°C, VII, A (2) 55.
kilns for. See *Kilns, cement; Kilns, rotary.*
kyanite-clay, stability tests, A (2) 55.
lime-pozzuolana, hardening theory, B (1) 6.
lime-silica, stability tests, A (2) 55.
mixed, classification, A (2) 55.
mixed clay, with excess $H_2O$, behavior, III, A (4) 133.
mortars, accelerators for, NaOH and KOH, A (6) 212.
multichamber mills, formula for determination of output, A (6) 212.
oxychloride, application, A (2) 55.
patent, P (2) 56.
for permanent sealing and joints, A (7) 244.
phosphorescent coloring for determining grade, A (6) 211.
for polishing wheels, A (4) 127.
**Portland.** See also *Cements, Portland clinker.*
alumina-waste products for, A (3) 106.
analysis, A (2) 84; chemistry, I, III, A (3) 94.
calcium chloride in, effect, A (9) 298.
calculation of raw-material mixture from two components, A (6) 211.
celite in, studies on CaO–$Fe_2O_3$, I; on brownmillerite, II, A (4) 163.
**Cements, Portland,** (*continued*)
chemical compounds in, characteristics, A (4) 131.
chemical constitution and development of technical properties, A (5) 172.
colored, oxides for, A (5) 172.
firing theory in automatic shaft kilns, A (8) 271.
glass content in, A (4) 131; effect on heat of hydration, A (11) 347.
gypsum *vs.* anhydrite, relative value, B (1) 6.
lime maximum in, A (4) 132.
magnesia in, effect, III–VII, A (5) 173.
mechanical process of manufacture, A (1) 6.
review of wet and dry processes, A (4) 132.
uncombined lime in, ethylene-glycol method for determination, A (5) 200.
white, compounds, A (4) 133.
yellow, pigments for, A (6) 211.
**Portland clinker.** See also *Cements, clinker.*
approximate glass content, A (4) 131.
ball-mill grinding data, A (6) 225.
commercial types, glass content, A (4) 131; effect of glass content on heat of hydration, A (11) 347.
constitution, A (6) 211.
effect of fluxes in burning of mixture, A (3) 95.
iron oxide *vs.* alumina as mineralizer for, A (3) 95.
microstructure of, and tricalcium aluminate, A (4) 133.
minor constituents, A (5) 173.
optical and structural properties, A (5) 173.
structure: II, A (2) 55–56; interrelation between three types of belite, III, A (4) 133.
**Portland concrete,** color analysis, B (8) 286.
**pozzuolana,** history, A (2) 55.
mortar, magnesia-lime behavior, A (1) 6.
natural and artificial, data, A (2) 55.
research: zeolitic nature, tests, I; flocculation tests, II, A (4) 132; behavior of mixed clay cements in excess $H_2O$, III, A (4) 133.
research study, A (1) 6.
Roman mortars, studies, A (4) 133.
structure of, electron-diffraction studies, A (1) 43.
theory of hardening lime-pozzuolanic cements, B (1) 6.
**production,** P (5) 173.
and putties for chemical work, A (7) 244.
**raw materials** calculation, A (1) 5.
**refractory:** change of strength on heating, A (4) 131; and mortars, chemical analysis and physical tests, II, A (4) 132; refractory properties, III, A (4) 132; see also *Refractories, cements.*
**refractory hydraulic,** composition, I–II, A (5) 186–87.
**setting time and strength,** effect of temperature, pressure, and water-cement ratio, A (3) 94.
and silica slurries, viscosity measurements, A (8) 285.
**silicate paints** for, A (4) 165.
**sintering plant** for, P (9) 299.
**slow-setting,** properties, A (2) 55.
**slurry** for, P (5) 173.
**sodium silicate** for, A (7) 244.
**Sorel,** phosphorescent appearance, A (10) 323.
special, introduction to study, A (5) 172.
**specific surface measurements,** A (1) 31.
**sulfur,** and acidproof brick for steel tanks, A (10) 332.
**Swiss standards** data, A (10) 324.
**talc refuse** for, A (11) 347.
**tamped,** setting velocity and mechanical strength, A (6) 212.
**ultra-violet rays** for grade determination, A (6) 211.
**Centrifugal apparatus** for centrifugal separating, P (2) 79.
centrifuge, brass, for mineral separation, A (2) 77.
centrifuge for optical tests of size of small particles, P (11) 361.
for dust separating and collecting from air and gases, P (2) 79.
supercentrifuge for continuous treatment of liquids, A (1) 30.
ultracentrifuge, efficiency, A (5) 194.
**Ceramic bodies, mixes, and ware.** See also *Porous ceramic bodies,* and specific types of ceramic bodies and ware throughout index.

**Ceramic bodies, etc.** (*continued*)
apparatus for, P (5) 194; method and apparatus for, P (4) 148.
ceramic composition, patent design, P (4) 167.
classification and properties, B (2) 90.
coating resembling terra sigillata, P (11) 358.
cordierite for low-expansion types, A (11) 358.
de-airing and degassing of, P (5) 194.
defects, technique for studies, A (4) 152.
fine ware, cost of electric firing, A (11) 362.
and glasses, impact bending strength, relation to thermal-shock resistance to fireclay bodies, A (11) 354.
glazed and impervious products, P (8) 282.
hygroscopic properties, A (2) 89.
as insulators for spark plugs, P (5) 191.
latex as temporary binder, P (9) 319.
lithium in, use, A (11) 351; lithium minerals and compounds in, A (6) 233.
and metals. See also *Bonds; Glass, glass-to-metal; Jointing materials.*
base metal on, applying layers, P (2) 79.
coatings for, P (8) 283, P (11) 361.
metallic bodies, joining, P (2) 80, A (3) 121–22, P (5) 204.
uniting surfaces by soldering, P (8) 294.
molded receptacles, method and apparatus for, P (4) 148.
nonplastic, preparation, P (4) 148.
porous: forming method, P (11) 353; production, P (5) 191, P (5) 204.
porous, geometrical, shrinkage studies, A (3) 122.
raw dry-press batch, P (8) 283.
and refractories, general discussion, A (11) 353–54.
slip-cast, apparatus for, P (6) 227.
stress measurement, Mellor formula, A (8) 284–85.
thermal-expansion tests, A (3) 111.
types, P (5) 191.
unfired: expansion and shrinkage measurements, A (11) 360; strength, A (8) 293–94.
unglazed spheres, drying tests, A (8) 285.

**Ceramic coatings.** See *Bonds; Coatings.*

**Ceramic concentrates** from pyritic schists, studies, A (1) 35.

**Ceramic directory** and data book, 1938, B (9) 319.

**Ceramic education.** See also *Education; Research and research laboratories.*
Comm. Rept., A (5) 204.
and employment at Univ. of Toronto, A (9) 317.
pottery making at Norwood High School (Ohio), A (6) 210.
present status of engineering curricula, A (5) 204.
Vinohrady Ceramic School for glazed tile products, A (7) 255–56.

**Ceramic engineering** as a career, B (4) 165–66.

**Ceramic industry.** See also specific types, such as *Enamel industry; Glass industry*, etc.
Americans as leaders in, A (11) 367.
in Canada, review, A (1) 46.
in central Brazil, A (1) 46.
ceramic plants, ceramic products in modern industrial plant construction, A (8) 282.
economic organization, A (2) 88.
in India, technological studies, A (10) 343.
in Mexico, A (3) 122.
and plants in Belgium and France, B (8) 294.
present-day scientific knowledge in service of, A (5) 197.
in South Austria, A (5) 203.
in Texas, A (8) 290.

**Ceramic membranes,** structural changes, A (11) 359.

**Ceramic mixes.** See *Ceramic bodies.*

**Ceramic raw materials.** See also specific types of ceramic materials throughout index.
borax and boric acid, detailed study of uses, A (1) 41.
classification, A (8) 285; classification and properties, B (2) 90; preparation, A (2) 83; production, P (3) 123.
coarse structure and endurance strength, X-ray tests, A (11) 366.
deferrization by reactivity of lignite, A (7) 262.
efflorescence prevention, A (7) 252.
electrical resistance up to 900°C, A (11) 358.
elutriation classification, P (1) 31.
evaporation of surface moisture, drying in trays, A (8) 284.

**Ceramic raw materials** (*continued*)
heat-treating, P (2) 80.
high-frequency technique studies, A (11) 365.
in Hungary, A (7) 262.
in India, geological history, B (10) 341.
iron oxide, colorimetric determination method, A (1) 41.
in Italy, research, A (1) 39.
macrostructure, X-ray tests, I–II, A (3) 118; defects in X-ray tube assembly, V, A (11) 360.
mixed, separation into classes of different electrical conductivities, P (2) 80.
mixing in exact proportions, A (8) 285.
molybdenum and compounds of, uses, A (1) 38.
and porcelain earths, chemical analyses, A (11) 363.
primitive trachyte for, A (10) 340.
process of improving working characteristics, P (1) 47.
and soils, alcoholate index for study, A (1) 43.
thermal properties *vs.* temperature measurements, A (7) 264.
wet method for preparation, P (5) 204.

**Ceramic technology,** notebook, B (8) 294.

**Ceramic ware (fine).** See *Art and artware; Chinaware; Colors; Decoration; Delftware; Faience; Glass; Majolica; Porcelain; Pottery; Tableware.*

**Cerium** as cerous salt, gravimetric determination method, A (3) 118.
reagent for detection of, A (8) 291.

**Cesco respirator** for filtering dust, A (4) 165.

**Chakraborty method** for destruction of organic matter for mechanical analysis, A (2) 83.

**Charts,** alignment, construction, B (1) 45, A (11) 359; nomographic chart for chemical calculations, A (5) 202; see also *Nomograms; Research.*
glass, for design progress and examination of color-temperature altering filters, A (2) 60.

**Checker brick.** See *Refractories, checker brick.*

**Chemical apparatus,** Marathon steels for, A (2) 78; see *Glass, chemical.*

**Chemical engineering,** calculations, nomographic chart, A (5) 202.
principles, B (9) 319.

**Chemical equipment,** ceramic material for, stability and protection of, A (5) 191; chemical products, types, and industrial uses, A (4) 165.

**Chemical industry,** antimony for, A (4) 155.
automatic control, A (5) 192.
in Bristol, 18th Century, A (9) 297.
natural and artificial plastic earths for, A (2) 82.
quantitative spectrochemical analysis, A (8) 291.
use of tin, A (4) 158.

**Chemical plants,** construction, relation of research to, A (6) 238.

**Chemical stoneware,** Brit. Stand. test method, A (7) 256.

**Chemical tests** on natural clays, A (4) 156.

**Chemical treatment** for preheated fuels, B (2) 81.

**Chemistry,** analytical, of tantalum and niobium, B (9) 317.
applied: progress reports, B (2) 90; Thorpe's Dictionary, B (4) 164.
chemical research in glass industry, V, XIX, A (10) 326; duties of ceramist in research and control in stoneware plant, X, A (11) 367.
colloid, comprehensive study, B (9) 317.
effect of mass production of science, A (4) 162.
industrial chemical calculations, B (1) 45.
inorganic and theoretical, Vol. 16, Pt and general index, B (4) 164.
international chemistry meetings, A (10) 344.
microanalysis for tests on alloys, A (4) 162.
nonmetallics in chemical industry, A (4) 165.
and physics, symbols of thermodynamical and physicochemical quantities, use, A (2) 86.
of Portland cement, I, III, A (3) 94.
of Trona process from phase-rule standpoint, A (10) 338.

**Chêvenard differential dilatometer,** B (7) 260.

**Chimney pots,** P (11) 358.

**China,** Geological Survey studies, A (3) 123.

**Chinaware.** See also *Dinnerware; Porcelain; Tableware.*
bone china: history of materials for, A (1) 26; *vs.* porcelain, differences, A (2) 76.

**Chinaware** (*continued*)
in England: future of trade, A (2) 76; market *vs.* quality, A (2) 77.
vitreous, properties of, *vs.* hard whiteware and porcelain, A (3) 108.

**Chiolite** as enamel opacifier, A (11) 349.

**Chromates,** reciprocal action on heating, I, A (8) 2[illegible].

**Chrome ore,** Ural Mt. deposits, A (5) 186.

**Chromic salts,** bichromate extraction, P (11) 367.

**Chromite,** Bur. Mines Rept., B (9) 315.
as chemical raw material, A (4) 156.
sources of: India, Ratnagiri deposit, A (10) 341; Philippine, 1937 production, A (5) 197; South Africa, analysis, B (3) 117.

**Chromite refractories.** See *Refractories.*

**Chromium,** anhydrous chlorides of, chemistry, A (1) 40.
in chromite ore, determination, A (4) 160, A (5) 199.
and chromium-nickel, columbium in, A (4) 149.

**Chromium sulfomolybdate catalyst,** process, P (3) 121.

**Chuboda method** for density studies of pure potash feldspar in microcline, A (1) 36.

*Ciment fondu.* See *Cements.*

**Classifying apparatus,** classifier for dry impalpable fines, A (6) 227.
classifier, patent design, P (4) 153.
Dorr multizone classifier, A (4) 150.
elevator classifier, P (4) 153.

**Claus process** for sulfur extraction, A (9) 316.

**Clay slips.** See *Slips.*

**Clay suspensions,** colloidal properties, A (3) 115; and gels, colloidal properties, I, A (4) 156, A (6) 229–30, A (11) 365.

**Clays.** See also *Kaolins; Shales,* and other types of raw materials.
acid decomposition, A (2) 82.
alcoholate index for study, A (1) 43.
alumina and titania in, effect on refractoriness, A (8) 280.
alumina extraction, review of processes, A (10) 330.
and aluminum, etymology of Polish words relating to, A (9) 318.
"ammonium-calcium" permutites, bentonites, thermal decomposition, A (8) 292.
ball, handling and cleanliness, A (1) 46–47.
and bauxite, rolled pebbles in, explanation, A (4) 157.
beidellite, commercial developments, A (4) 156.
bentonite and kaolin, constitution and properties, A (8) 288.
blasting, A (1) 47; see also *Mining.*
bleaching, acid leach and oil bleach tests, A (11) 363.
adsorption process: behavior of oil constituents, III; characteristics and classification, IV–V; adsorption process in percolation method, VI, A (4) 155; adsorption process in vapor phase, VIII, A (10) 338.
Canadian types, studies, A (1) 35–36.
china and paper types, Bur. Mines data, B (11) 364.
Filtrol, hydrosilicate of magnesium type, A (4) 155.
montmorillonite type, behavior studies, A (11) 363.
natural *vs.* synthetic, colors of, A (11) 363.
Bragg studies, A (7) 261, A (9) 313, A (10) 338.
brick, rehydration, A (2) 68.
calcareous surface types, drying characteristics, A (7) 261.
and ceramic bodies, humidity, "Owep" apparatus for, A (1) 29.
and ceramic fluxes for pottery, Brit. geology data, A (7) 261.
ceramic plastic earths, uniform classification, A (6) 231, A (8) 290.
chemical studies on clayey weathering and kaolinization, A (10) 338.
chemistry: behavior of dyes and organic compounds forming colored salts on clay, I; behavior of essential oils and constituents on clay, II, A (11) 363.
china, deflocculation and controlled separation, A (4) 156.
china, as filler in rubber compounding, A (10) 338.
china, and halloysite, expansion-contraction curves, A (4) 158.
china, research, A (2) 83.
clay colloids as cause of bedding in sedimentary rocks, A (1) 35.
clay minerals: studies, A (7) 261; thermal expansion, A (4) 158.

**Clays** (*continued*)
clay molecule, chemical constitution, A (8) 288.
clay paste, effect of moisture on mechanical properties, A (4) 151.
colloidal clay solutions, physicochemical properties, A (6) 231.
colloidal properties, relation to crystal structure, A (10) 342.
commercial classification in U. S., 1936, B (7) 263.
common, beneficiation, A (7) 261.
constitution: Ekblaw and Grim theories, A (11) 363; and general properties, A (2) 82.
contact clays, developments in use, A (5) 198.
crude, particle-size groups, A (9) 314.
de-aired mixes, structure, A (3) 123; see also *De-airing*.
decolorizing, by mode of dehydration, A (2) 82.
degasification, in extrusion presses, P (6) 227.
drying, effect of capillary pressure, I, A (4) 151.
elastic and plastic properties, B (6) 235.
elementary examination, A (1) 36.
for enamel mill additions, data, A (9) 300.
exchangeable bases, determination, A (6) 230.
filler, developments in, A (4) 156.
fire clay, quality control, practical system, B (11) 357.
fractionation into closely monodispersed systems, A (11) 365.
for glass pots, manufacture in Germany and Russia, A (3) 103.
and glazes, molecular formulas, A (3) 120.
grinding, mixing, and preparation, A (5) 193.
for grinding-wheel bonds, effect, A (2) 51.
heat of dehydration, A (1) 43.
hygroscopic properties, A (2) 89.
Japanese, acid, thixotropy of suspensions, A (4) 158.
and kaolins, chemical composition and thermal resistance, A (1) 35.
mechanical and mineralogical subdivision, A (4) 157; mechanical properties, relation to state of aggregation, II, A (4) 151.
melted, properties, A (1) 47.
mineral dust, meter for measurement, A (2) 78.
minerals in, X-ray diffraction studies, A (1) 37.
mining apparatus for, A (8) 292–93; selective mining, A (3) 123; see also *Mining*.
natural, chemical tests, A (4) 156.
oil-decolorizing, treatment, P (8) 294.
origin and coloring, A (5) 197.
particle-size measurement, A (4) 162.
and permutites, negative adsorption and steam pressure isotherms in, B (3) 117.
physical properties, tests, A (11) 360.
plastic, for metallized pottery, A (3) 93.
potter's, disruptive action of lime, prevention, P (5) 191.
for pottery, treatment, P (6) 224; N. C., for pottery, treatment, A (4) 156.
pottery, *vs.* washed kaolin, tests, A (10) 332.
properties, A (9) 314.
purification process in India, B (7) 263.
Putnam, particle size in relation to base exchange and hydration properties, A (5) 197.
and quartz, reactivity of lignite as cause of deferrization, A (7) 262.
raw, preparation, P (11) 361.
refractory, chemical analysis, simplified Kallauner-Matějka method, A (10) 342.
refractory, kaolin, and refractory earths, A (2) 72.
refractory, secondary expansion, B (8) 281.
research on nature of, review, A (9) 313; review by Searle, A (9) 313.
Roman and Flegrean, for pozzuolana mortars, A (4) 133.
for rotary "drilling mud," tests, B (4) 166.
scrapers for stripping, A (8) 293.
silica in, Finn-Klekotka method, A (3) 120.
sources of: acid, Jap., A (3) 116.
Ala., A (9) 313.
attapulgus, in Ga., A (1) 35.
ball, in England, uses, A (1) 35.
china, in Cornwall, A (8) 289; English china, ceramic raw material substitute for, P (1) 27.
clay minerals in Ill. limestone and dolomite, A (6) 229.
fire clays, Krasnoufimsk, A (2) 82.

**Clays, sources of** (*continued*)
fire clays in Scotland, A (6) 230; Scottish fireclay resources, B (7) 263.
flint clay pit in Mo., sandstone-covered, A (10) 341.
French: coloring of, A (5) 197; studies in 1937, A (8) 288.
India, technological studies, A (10) 343.
Italian, for glassmelting tanks, A (3) 104.
and kaolin: in Italy, geographical and geological data, A (2) 82; types in U. S., B (3) 117.
Miss., A (1) 47.
Mo. flint and diaspore, mineral composition and origin, B (1) 40.
Northwest deposits, B (6) 238.
refractory, Belkinskii deposits, A (5) 198.
refractory, ceramic properties of Ol'gino types, A (6) 231.
refractory, in France, composition and deposits, A (4) 158; chemical composition, A (7) 262.
refractory, in Italy, tests, A (1) 39.
refractory, from Krasnogorovka deposits, A (1) 39.
Spain, composition and properties, A (10) 338–39.
TVA region, B (4) 159.
Ukrainian, for dry-pressed brick, A (1) 39.
Unaker, for porcelain, A (7) 243.
Wash. and Idaho, geology and data, B (6) 238.
stiff-mud, *p*H control for improvement, A (10) 329.
structural formulas and classification, A (8) 290.
structure: electron-diffraction studies, A (1) 43; studies, A (7) 261.
swelling of, determination, A (10) 344.
titanium dioxide in, concentration, A (6) 230.
treatment, P (1) 41.
types and origin, A (7) 261.
whiteware, acid and base binding capacities and viscosity relations, A (6) 229.
workability, instrument for measurement, A (2) 78.
X-ray tests on: differentiation of micas by X-ray powder photographs, III, A (8) 290.

**Clayware.** See also *Brick; Building materials; Ceramic bodies; Earthenware; Insulators; Masonry; Paving materials; Pipes; Porcelain; Roofing materials; Stoneware; Structural materials; Terra cotta; Tile.*
aggregate, lightweight, fibrous, inorganic type, A (9) 307.
batch mixing by traveling scale for accuracy, A (11) 359.
bentonite for increasing density and decreasing weight, A (3) 115.
cellular composition, P (8) 279.
ceramic mixtures, P (7) 266.
chimney pots, P (11) 358.
commercial salt and chestnut extract with tannin for formation of clay products, P (7) 266.
de-airing of, questionnaire, A (5) 193; see also *De-airing*.
defects. See also *Brick, defects*.
cracks, effect of low-pressure drying, A (8) 284.
efflorescence studies, A (6) 219–20, A (7) 252.
laminations and other structural defects caused by de-airing, A (3) 110.
from soluble salts, elimination, A (3) 103.
diatomite and pumice stone for building materials, A (3) 115.
drying rate, effect of temperature and humidity, A (6) 225, A (8) 284.
electrical and thermal properties of brick, correlation, A (4) 141.
fired clay slabs, manufacture, P (2) 76.
flashing block, P (6) 220.
flue liner, P (11) 358.
freezing test for brick strength, A (5) 184.
glazes and underslips for covering surface imperfections, A (3) 107.
green, viscosity and moisture content, apparatus for, A (9) 310.
heavy, nonplastic materials in, A (6) 220.
heavy ceramic, 1936 review, A (3) 103.
hollow polygonal clay body, P (9) 307.
impregnation and enameling of, P (8) 294.
low-pressure drying, effect on cracks, A (8) 284.
mold composition with montmorillonite, P (11) 353.
porous building materials, problems in use, A (9) 307.
soluble salts in, effect, A (3) 103.

**Clayware apparatus.** See also *Apparatus*, and specific types of apparatus and equipment throughout index.
alloys for pug-mill knives, B (8) 286.
for brick and tile, central lubrication under pressure, A (2) 78.
briquetting machine, P (5) 194.
for clay handling, A (2) 78.
conveyers, crushers, and separators, Marathon steels for, A (2) 78.
development in 10 years, A (8) 284.
earth working tool, P (6) 227.
inspection and proper care, A (8) 284.
metals for machinery, improvements, A (5) 193; special wear-resisting type, A (3) 111.
mud mixer and equalizer, P (8) 294.
for preparation of clays, A (5) 193.
for roughing or producing patterns on brick, tile, etc., P (1) 32.
sanding machines, automatic, A (11) 352.
scrapers for stripping, A (8) 293.
"sieve kneader" for clay preparation, A (11) 360.
for stoneware pipes, P (10) 332.
for tile and brick, P (4) 153.
wet and dry pans and pug mills for, A (8) 284.

**Clayware plants,** artificial drying in, types, A (7) 257–58.
importance of production statistics, A (7) 265.

**Cleaning,** compressed-air, for dust removal, A (4) 151; see also *Dust apparatus*.
of metals. See also *Sandblasting*.
airless shot-blasting process, A (10) 333.
analysis and control, A (8) 271.
castings for enamels, A (9) 299; cost study, A (3) 96.
cleaner tank, methods, A (1) 8.
cleaning solutions, alkaline cleaners and wetting agents, types, A (10) 324.
degreasing of metal articles, P (2) 89.
descaling, Bullard-Dunn process, A (2) 56.
electrolytic process and apparatus, P (2) 54.
films on, treatment, A (8) 271; drawing compounds and pickling solutions, A (10) 324.
and finishing, for enamels, progress, 1937, A (6) 213.
in pickle room, alkalis, A (1) 7.
pickling of sheet iron, A (6) 212–13; pickling of sheet iron by annealing, A (2) 56; see also *Pickling*.
sandblasting and tumbling methods, A (5) 174.
sheet iron, special washing machine, A (5) 174.
sheet steel, acid baths, A (1) 7.
sodium orthosilicate and sodium cyanide for, A (1) 7.
and treating of enameled ware, cleansing agents, A (2) 59.

**Cleaning apparatus,** airless shot blasting, A (3) 96.
for ceramic materials, P (5) 194.
clay washer for molding sands, A (10) 334.
comparison of various types, A (3) 96.
and polishing apparatus, portable electric, P (2) 52; portable electric surfacer, A (8) 268.
water-sandblast gun, P (1) 32.

**Clevelandite** (feldspar) in S. D., chemical analysis, A (3) 116.

**Clinkers.** See also *Cements, Portland clinker*, and brick, with Portland cement of Mn and S, A (4) 132.
cement, Wagner method for surface measurement, A (3) 110–11.
from cement mill, petrographic study, A (8) 271.
clinker minerals, polarization microscope for quantitative tests, A (9) 299.
liter weight *vs.* quality, A (9) 298.
manganese and sulfur in, reducing firing, color changes, and strength, A (4) 132; properties, A (9) 298.

**Coal.** See *Fuels*.
**Coal ash.** See *Ashes, coal ash*.
**Coal slags.** See *Slags*.
**Coal-washing jig,** Baum-type, B (6) 229; pulsator type, B (6) 229.
**Coating apparatus** for fusing and spraying pulverized materials, P (5) 175.
**Coatings.** See also *Abrasives; Bonds*.
coating properties of enamel slips, A (6) 212.
for filter-press plates, types, A (4) 153.
for frosted electric lamp bulbs, composition, P (9) 306.
metallic oxides, P (11) 353.
silicate surface, P (1) 48.

**Cobalt** and compounds of, A (4) 156.
gravimetric determination by dipotassium sodium cobaltinitrite, A (9) 316.
hydroxides of, A (3) 119.
quantitative determination by o-hydroxyquinoline, A (9) 316.
volumetric determination method, A (1) 42.
**Cobalt oxide** for enamel ground coats, studies, A (5) 174–75.
**Cobalt selenates** and basic Ni tellurate, process, A (7) 263.
**Cobalt sulfide** and nickel sulfide, mechanism of precipitation, II, A (11) 366.
**Coercimeter,** development and application, B (11) 365.
**Coke,** by-product, capacity increase, A (10) 336.
solid, ashless and gasless type for electrodes, P (8) 286.
**Coke chambers,** high temperature, effect of coke gas and water steam on refractories, A (6) 221.
**Colcothar** and barite, ball mill for, A (8) 284.
**Colloidal mineral colors,** preparation, A (2) 79.
**Colloidal properties** of clay suspensions, A (3) 115.
of clay suspensions and gels, A (6) 229, A (11) 365.
**Colloidal systems** as glasses, enamels, and natural gems, A (8) 291.
structures and forces of, A (2) 86.
**Colloids.** See also *Soils.*
barite and colcothar, ball mill for, A (8) 284.
clay, physicochemical properties, A (6) 231.
clay colloids as cause of bedding in sedimentary rocks, A (1) 35.
in clay suspensions and gels, studies, A (4) 156, A (6) 229–30.
or clays in soils, sensitive hydrometer for determining small amounts, A (1) 30, A (8) 285.
colloid optics, reciprocity theorem, A (3) 120.
history and structure, A (2) 86.
nature of colloidal chemistry, comprehensive study, B (9) 317.
protective, in bone-china slips, A (4) 147.
soil, anion adsorption by, relation to free iron-oxide changes, A (2) 81.
weakly solvatized, adsorption on solid adsorbents: adsorption of colloidal iron hydroxide on quartz, I, A (10) 341–42.
**Color apparatus.** See also *Colorimetric analysis; Colors.*
colorimeters for determination of energy-distribution curve, A (2) 78.
colorimeters, patent design, P (2) 79.
colorimeters, photoelectric, 3-filter, chromaticity limitations, A (3) 110.
colorimeters, wedge, and photometer for decoloration control, A (1) 12.
color-matching booths to eliminate shadows, A (10) 324.
for measuring color and light densities, P (9) 298.
Razek-Mulder color analyzer for Portland cement concrete, B (8) 286.
for tristimulus values and brightness tests, A (3) 110.
**Colorimetric analysis** of iron oxide in raw materials and glass, A (1) 41.
of silica in fluorine, A (1) 41.
of silica and phosphoric acid in aluminate solutions, A (1) 41.
**Colors.** See also *Pigments.*
ceramic coloring matters, production, P (8) 270, P (9) 317.
for ceramics, composition, P (7) 244.
chrome oxide for green Portland cements, A (5) 172.
in clay minerals, chemical studies, I–II, A (11) 363.
cold cathode carbon-dioxide discharge lamp for, A (3) 110.
colloidal mineral preparation, A (2) 79.
color grading, review, A (3) 93.
color wedges, Hellige wedge pehameter, A (8) 283.
for enamels, factors in, A (5) 175.
for glass. See also *Glass, colored.*
bottles, effect on setting rates, A (11) 350.
enamels, and natural gems, A (8) 291.
and light for stained glass craft, B (3) 93.
luminescent, P (10) 323.
Opaltone for window glass, A (4) 140.
selenium pink, rare earths for modification of, A (5) 172.
for glazed pottery, Mb and its compounds, A (1) 38.
for glazes, composition, A (7) 242, A (11) 347–48.
**Colors** (*continued*)
Inter-Society Color Council, A (11) 367.
plumbiferous overglaze, I–II, A (4) 148.
theory of Walter Garner, A (2) 53.
tristimulus values and brightness of, calculator, A (3) 110.
for vitreous ware, process, P (8) 279.
yellow, cadmium pigments for, A (4) 160.
**Columbite-tantalite** in Australia, A (10) 340.
**Columbium,** history, technology, and use, A (4) 149.
**Combustion,** apparatus and control at Hell Gate, A (6) 236.
automatic, in micro-elementary analysis, electric furnace for, A (8) 284.
"blue" and "yellow," studies, B (3) 113–14.
control equipment, automatic, for furnaces and boilers, A (1) 46.
and dissociation, gaseous, mathematical discussion, A (9) 312.
draft, effect, A (7) 259–60.
effect of moisture on calculations, A (9) 312.
electrical meters for control, A (4) 153.
flameless surface, for increase in density of raw ceramic materials, A (5) 187.
of fuel in annular kilns, excess air in, A (7) 259.
heat of, flame temperature, and specific heat of combustion products, relation, A (11) 361.
in intermittent kilns, efficiency, A (8) 286–87.
progressively delayed, apparatus for, P (7) 261.
studies on use of town gas, A (2) 80.
temperature calculation by method of successive approximations, A (11) 361–62.
temperature data on solid and gaseous fuels, A (6) 227.
**Combustion train** for determination of carbon and hydrogen, A (10) 336.
**Commercial Museum,** pottery, A (3) 122.
**Comminuting** of hard materials, impact crusher for, P (3) 112.
**Compressed air,** costs, A (5) 192; dust and water removal from, A (10) 335.
**Compression tester** for crushing strength of granules, A (5) 192.
**Concentrating apparatus** for kaolin, P (8) 286.
**Concentration method** and electrolytic method for Pb in water, A (5) 200.
**Concentrators,** mineral, P (11) 361; patent design, P (4) 153.
**Concrete pavement cracks** and expansion joints, Rept. of Comm., A (9) 299.
**Concretes,** calcium chloride effect, A (9) 298.
Iporite (foamy), process, A (5) 184.
for pavement slabs, curing tests, A (9) 298.
for road surfaces, coefficients of friction with rubber tires, A (9) 298.
silicate paints for, properties, A (4) 165.
**Condensers,** ceramic insulators for, A (10) 332.
dielectric material composition, P (5) 191.
quartz, low loss, V, A (11) 360.
**Conductivity,** high-frequency, and dielectric losses, measurement, A (11) 360.
thermal. See *Thermal conductivity.*
**Conductors,** electric, sealing through quartz or hard glass, P (6) 219.
heat or electrical, ceramic material for, P (10) 333.
**Cones,** temperature-measuring, A (4) 152.
**Control systems,** automatic, types, A (5) 192.
**Conveying apparatus,** belt conveyers, design principles, A (4) 149.
compressed air for, A (1) 28.
conveyers for furnaces, A (7) 245.
conveyers, multimotor drives, A (10) 335.
"Meco" electric shaker conveyer, A (5) 193.
types, P (8) 286.
**Cookeite** and hydromuscovite associated with gold, paragenesis of, A (9) 314.
**Copper.** See also *Metals; Metals for enameling.*
cast, polishing method, A (7) 240.
in U.S.S.R., A (10) 339.
**Coprecipitation** and $p_H$ value of precipitations with 8-hydroxyquinoline, A (10) 342.
**Cordierite,** artificial, for "Kemite," A (11) 358.
for low expansion in ceramic bodies, A (11) 358.
magnesium-aluminum-silicate bodies for insulation, A (6) 224.
**Corhart tank blocks.** See *Tank blocks.*
**Corniag glass 015** for glass electrode, A (11) 360.
**Corrosion.** See also *Weathering.*
of alloys, resistance, A (9) 310.
**Corrosion** (*continued*)
of metallic surfaces by impact of falling drops, A (9) 310.
of metals, mechanism, I, A (4) 134.
resistance, effect of polishing, A (8) 267.
**Corundite** for ceiling slabs in atmospheric furnaces, A (7) 245.
**Corundum,** rapid analysis, A (4) 160.
in spark plugs, P (7) 257; powdered, for spark plugs, P (6) 224.
**Costs.** See *Management.*
**Crazing** of glazes, A (8) 293.
of tile, types, A (3) 108.
**Creep-test data** on alloys, A (6) 225.
**Cristobalite,** high, structure, A (8) 292.
in sedimentary rock, in U.S.S.R., A (10) 340.
thermal reaction and residual expansion, VI–VIII, A (5) 200.
**Crucible process** for tool-steel manufacture, A (4) 149.
**Crucibles.** See also *Refractories, crucibles.*
fused magnesia, A (8) 280.
graphite, manufacture, A (7) 253; in Germany, A (2) 75.
patent design, P (2) 75; use and care, A (3) 106.
**Crushing** and grinding, laws of, current research and results, A (2) 51.
primary, Bur. Mines Progress Repts., Nos. 1 and 2, B (7) 258; No. 3, B (8) 286.
processes, mechanical, efficiency, A (11) 360.
**Crushing apparatus,** conical stone crushers, A (3) 110.
hammers for impact-breaking or crushing machines, P (2) 80.
impact crusher, P (1) 32; impact crusher for comminuting hard materials, P (3) 112.
large-size roll crusher, A (4) 150.
type TY reduction crusher, A (3) 111.
**Cryolite,** Bur. Mines Rept., B (9) 315.
disintegration, A (7) 263–64.
molecular state of oxides dissolved in, A (2) 85.
solubility of various oxides in, A (2) 86.
structure of, by oscillating crystal method, A (9) 317.
surface tensions of, with $Al_2O_3$, A (9) 317.
**Cryptol laboratory furnace,** A (1) 31.
**Crystal chemistry,** studies on reactivity of solids, B (4) 164.
**Crystal plasticity,** completion of slip-velocity formula, A (2) 84.
**Crystal polymorphism,** theory, A (1) 42.
**Crystal structure** of aluminum arsenate, A (2) 82; of aluminum phosphate, A (2) 82.
*vs.* base-exchange capacity of minerals, relation, A (11) 364.
of "beta-alumina," A (1) 42.
of clay minerals, A (10) 338.
of clays *vs.* colloidal properties, A (10) 342.
of cupola slags, A (4) 162.
of Mg-Al spinels with $Al_2O_3$ surplus γ-alumina, A (2) 70.
of potassium, rubidium, cesium, and thallium fluosilicates, and of $LiMnO_4 \cdot 3H_2O$, A (2) 84.
**Crystalline glazes.** See *Glazes.*
**Crystalline quartzites** for silica brick production, A (2) 75.
**Crystallite theory** for structure tests on glass, I, A (5) 181.
**Crystallization,** mineral incrustation, data, A (5) 198.
**Crystals,** $CuSO_4 \cdot 5D_2O$ and $CaSO_4 \cdot 2D_2O$, X-ray tests, A (9) 298.
elastic waves in, propagation velocities, A (10) 342.
helium passage at ordinary temperatures, A (1) 44.
isomorphous, studies, A (5) 200.
of oblique systems, X-ray tests of lattice constants and axial ratios, A (1) 45.
of random orientation in thin section, finishing birefringence color, estimation, A (4) 162.
silicon-carbide, electron-diffraction halo pattern, A (1) 2.
single calcite, deformation under high confining pressures, A (5) 196.
theory of fusion and crystallization, A (3) 119.
two-dimensional, of silicon pentoxide, A (5) 200; of silica, A (11) 366.
**Cupolas.** See *Refractories, cupolas.*
**Cuprous oxide,** yellow, studies, A (2) 87.
**Cutting fluids** for metals, process and types, A (4) 127; use, A (11) 345; see also *Lubricants.*
**Cyanite.** See *Kyanite.*
**Cyclone apparatus** for separating solid particles from gases, P (5) 194.

**Czechoslovakia,** decorative ceramic ware and colored glazes, A (7) 242.
decorative glass and jewelry, B (7) 244; modern glass, A (7) 242.
mineral wealth of Slovakia, A (7) 262.
porcelain industry since 1927, A (7) 257.
pottery types, A (5) 171; history and types, A (7) 242.

**Data,** experimental. See *Research and research laboratories, experimental data.*
**Deaërator,** vacuum, construction, A (6) 226.
**De-airing** and degassing ceramic bodies, P (5) 194.
by drawing and de-aired mixes, structure of mixes, A (3) 123.
of fireclay brick for regenerator service, A (4) 144.
of heavy clayware, questionnaire, A (5) 193.
laminations and other structural defects from, A (3) 110.
for pug mill, A (11) 359.
recommendations, A (4) 152.
value for ceramic clays, A (3) 111.
**De-airing apparatus** for clays, P (7) 259; extrusion presses for de-airing clay, P (10) 336.
**Dean-Stark method** of moisture determination and apparatus, A (10) 335.
**Debye-Scherrer patterns** for refractories study, A (4) 146.
**Decalcomania.** See *Decoration.*
**Decolorizing,** bauxite for, data, A (6) 229.
of clays, natural, by mode of dehydration, A (2) 82.
**Decomposition,** acid, of German clays, A (2) 82.
**Decorating apparatus,** machine and method, P (7) 259.
for marking or decorating ware, P (5) 194.
for round object, P (4) 153.
for stenciling ware, P (6) 211, P (7) 259, P (9) 312, P (10) 323.
**Decoration.** See also *Art and artware,* and cross-references.
American dinnerware, A (4) 130; White House chinaware, history, A (4) 129.
Anglo-Saxon pottery, identification, A (4) 128.
of ceramic products, glass, and enameled iron, P (6) 211.
of ceramic ware, formulas and processes, B (4) 130.
Chinese, underglaze *rouge-de-fer,* A (4) 130.
coating ceramic ware with metals, P (8) 270.
colors for kitchenware, A (1) 10.
decalcomania, machine for application, P (7) 244; application method, P (6) 211.
decalcomania, patent designs, P (1) 5, P (2) 54.
decalcomania paper, production, P (1) 5, P (3) 93, P (8) 270, P (11) 347.
decalcomania transfer, P (7) 244.
8th Century B.C. geometric Attic amphora, A (4) 130.
enamel composition, P (5) 172.
enameled plaque, method, P (5) 176.
enamels for copper ware, A (5) 174.
etching process for enamels, tests, A (5) 175; etching and embossing, principles and methods, A (9) 297.
form and decoration, industrial applications, A (2) 62.
fusing glass on gold, Chinese discovery, A (4) 134.
of glass. See also *Glass, decorated.*
in Bohemia in 17th and 18th centuries, A (8) 274.
and china, modern trends, A (7) 243.
and design of, English development, A (8) 269.
enamel, and quartz, atom-thick layer of noble metals, A (4) 138.
etching and frosting solutions, A (6) 215.
form and decoration, hand *vs.* industrial production, A (5) 171.
German Comm. on, A (2) 63; in Germany, A (8) 269.
hollow, Aerograph machine for, A (11) 350.
panels, Parisio's engraved and decorated work, A (8) 275.
and porcelain, true gold paints for, A (4) 130.
printing process, A (6) 210.
Protyp portable electric motor for, A (9) 304.
relation between design and form, A (7) 242.
sandblasting and other processes, A (8) 270.
silk-screen process, II; photographic
**Decoration** of glass *(continued)*
principles, III; miscellaneous decorating methods, IV, A (4) 129.
by various types of lines, method, A (2) 53.
glazing of ware, methods, A (6) 209.
imitation mother-of-pearl, A (2) 53.
iridescent effects, method, A (2) 53.
kilns for. See *Firing; Kilns, decorating.*
luminescent colors for glass bodies, P (10) 323.
marbled or crackled effects, process, P (1) 5.
nickel and copper plating of glass and porcelain ware, A (7) 243.
ornamenting ceramic articles, process for, P (1) 5.
plastic slip underglaze painting and porcelain artware of M. L. McLaughlin, A (7) 243.
of porcelain, P (8) 270.
of pottery, P (8) 270–71; rotary electric kiln for, A (4) 154.
of Russian Imperial glass and china, A (8) 269–70.
Scandinavian design in pottery, glass, and silver, A (2) 53.
Spode and Wedgwood china, hunting scenes, A (7) 243.
stencil apparatus, P (6) 211; stencil method and machine for decorating surfaces, P (9) 312; stencil process for curved surfaces, P (3) 94.
stencils, screen, method of making, P (5) 172.
of whiteware, photographic relief technique, A (4) 129.
**Decorr.ont,** stained glasswork of, A (1) 4.
**Deënameling,** method, A (1) 8; method and agent, P (1) 10.
process and use of waste enamel, A (4) 136.
sandblasting and chemical methods, A (4) 134.
solutions for, A (4) 134.
**Defecator** with integral tank and evacuator, P (5) 191.
**Deferrization** due to lignite reactivity in clay and quartz, A (7) 262.
**Definitions,** ceramic facing tile (Czechoslovak standard), A (7) 255.
glass: "ductility," A (4) 137–38; thermal endurance, A (4) 139.
**Defoaming method** and defoamer composition, P (6) 227.
**Degreasing.** See *Cleaning of metals.*
**De Haen's iodometric process** for analysis of colored glasses, I, A (1) 10.
**Dehydration** of minerals, apparatus, A (9) 310.
and transformation of kaolin, studies, A (2) 85.
**Delftware,** English: at Bristol, A (9) 297; Lambeth delft pottery, A (9) 297; see also *Art and artware,* and cross-references.
**Density** and associated quantities, ceramic application, A (6) 224; physical magnitudes related to, A (11) 367.
X-ray exposure test for soundness of work piece, A (11) 366.
**Dental apparatus,** grinding instrument, P (5) 170.
**Dental materials,** artificial teeth, P (5) 191.
glass, A (1) 12; artificial dentures, P (9) 305; opaque colored glass, P (5) 182.
**Descaling** of metals: Bullard-Dunn process, A (2) 56; electrolytic process, P (2) 54.
**Design.** See *Decoration,* and cross-references.
**Desulfurization** of blast-furnace slags, II, A (8) 292.
**Detergents.** See *Cleaning of metals.*
**"Detred" arch** and "Detrick" blocks for combustion chambers, A (3) 105–106.
**Devers konimeter** for dust sampling, A (6) 237.
**Devitrification of glass.** See *Glass, devitrification.*
**Dew point,** accurate determination, apparatus, A (10) 333.
**Dew-point potentiometer,** portable, for tests on moisture in gases, A (4) 149–50.
**Diaspore** in quartzite, Sioux product, A (4) 156–57.
for refractories, source, and use, A (9) 307.
**Diaspore bauxite,** studies, A (10) 339.
**Diaspore clays,** Mo. studies, B (1) 40.
**Diatomaceous earths.** See *Earths.*
**Diatomaceous insulating materials,** thermal conductivity tests, A (5) 188.
**Diatomite (kieselguhr),** for building materials, A (3) 115.
general study, A (2) 82.
mining and refining, A (8) 289.
**Diatomite** *(continued)*
rock, impregnation by Na-silicate solutions, effect, A (6) 219.
for sound insulation, A (3) 116.
sources of: Algerian, data, A (8) 288; Great Britain, production, and commerce, A (2) 83; Ore., B (1) 40.
**Dicalcium aluminate** as chemical compound, tests, A (2) 87.
**Dicalcium ferrite** and tetracalcium aluminoferrite, action of saturated steam, A (3) 94.
**Dicalcium phosphate,** production, P (6) 235.
**Dicalcium silicate** and tricalcium silicate, hydration, A (3) 94.
**Dictionaries,** enameler's, and glossary, B (2) 59; on enamels, B (4) 136.
Thorpe's, applied chemistry, B (4) 164.
**Dielectric constants** and conductivities of polycrystals of irregular systems, A (4) 160.
and dipole losses of glass at high frequencies, A (10) 326.
**Dielectric losses** in inorganic glasses at radio frequencies, A (4) 137.
measurement and high-frequency conductivity, A (11) 360.
**Dielectric material,** ceramic, manufacture, P (8) 283, P (11) 359.
for condensers, composition, P (5) 191.
solid, electrical properties, A (2) 65.
**Dielectric measurements** of powders, A (5) 193.
**Dielectric properties** of oxide mixtures, X-ray tests, A (11) 366.
**Diesel engine,** efficiency, A (5) 192–93.
**Diffusion theory** within crystal l[illegible]e of solids, studies, A (6) 234.
**Dilatometers,** Chévenard differential type, for linear expansion measurements of ceramic ware, B (7) 260–61.
Leitz, for testing glass, A (6) 215.
magnetic, use, A (2) 78.
for microgasometric analysis, A (8) 291.
precision-recording type, A (8) 285.
**Dinnerware.** See also *Art and artware; Chinaware; Decoration; Porcelain; Tableware.*
saucers for supporting cups and glasses, P (7) 257.
semivitreous, talc and pyrophyllite in, A (7) 257.
**Dipotassium sodium cobaltinitrite,** application to gravimetric determination of cobalt, A (9) 316.
**Diseases** (industrial). See also *Dusts; Safety; Silicosis.*
dangerous dust and fumes, types, A (5) 203.
industrial dermatoses, treatment and legal aspects, A (2) 89.
industrial germ invasions, vitrified and enameled products for prevention, A (5) 204.
lead poisoning, tests on lead glazes, A (11) 359.
physics of air hygiene, A (2) 89.
prevention of accidents and occupational diseases, A (6) 237.
**Disintegrating equipment,** tabulated data, A (9) 310–11.
**Disperse systems,** viscosity and plasticity test, A (9) 311.
**Dispersoid analysis,** photocells for, A (8) 285.
**Distillation method** for moisture content in refractory materials, A (5) 200.
**Distilling apparatus,** enameled cast-iron, A (6) 213.
**Dithizone method** for zinc calculations, A (8) 291.
**Dolomite,** lime and magnesia separation, A (11) 356.
sources of: and magnesia in Siberia, deposits, A (7) 262; in Czechoslovakia, for glass industry, A (2) 60; French, characteristics, A (3) 122.
**Dolomitic material,** MgO and $CaCO_3$ in, P (1) 45; dolomitic rock, magnesium oxide from, process, P (8) 292.
**Dorr FX classifier** for low-discharge ball mill, A (1) 27–28.
**Dorr multizone classifier,** A (4) 150.
**Doty method** for testing molding sand in foundries, A (6) 217.
**Doucil solutions** and various salt solutions for base-exchange studies, II, A (3) 118.
**Draft,** control in leers, P (7) 250.
effect on combustion, studies, A (7) 259–60.
**Drawing compounds** for porcelain enamel work, A (9) 299.
relation to cleaning materials, A (10) 324.
**Dressing apparatus,** types, P (6) 208.
**Drilling apparatus** of Bur. Mines, B (8) 286.
**"Drilling mud,"** rotary, tests, B (4) 166.
**Drop-shatter test** for coal, A.S.T.M. proposed method, A (4) 154.

**Drying,** adiabatic absorption process, A (10) 333.
and air conditioning, fundamentals, A (8) 284.
artificial, sources of heat, A (7) 257–58.
of brick, artificial process, A (11) 359.
of brick, defects caused by, A (11) 359.
of ceramic products, hot moist air process, A (10) 334.
of ceramic ware, device for, P (11) 361; of large ceramic articles, apparatus for, P (8) 286.
of clay shapes, effect of temperature and humidity on drying rate, A (6) 225, A (8) 284.
effect of capillary pressure, I, A (4) 151.
and firing, effect of shape of samples on shrinkage, A (3) 122.
and firing of ceramic ware, studies, B (3) 113.
of glasspots, "thermal diffusion" and "electric diffusion" methods, A (6) 224–25.
of "hourdis" brick, difficulties, A (7) 257.
at low pressures, data, A (8) 284.
of materials in trays, surface moisture and evaporation, A (8) 284.
natural drying sheds, A (7) 258.
of new kilns before use, A (7) 260.
of pottery, P (5) 194.
pulsating circulating air for rapid work, A (2) 79.
of refractory materials, methods, A (1) 28.
of solid bodies, XVI–XXV, A (5) 193.
of solids, air process, A (10) 333.
spray-drying and solvent recovery system, P (2) 80; spray-process methods, A (2) 78.
of unglazed ceramic spheres, thermostatical tests, A (8) 285.
waste-heat, power reduction and moisture control, A (4) 150.
**Drying apparatus,** air-drying type, A (6) 224.
for brick, automatic temperature regulator, A (1) 27, A (4) 152.
driers, artificial heat type, A (6) 226.
artificial, for refractories, A (5) 186.
automatic temperature regulator, A (1) 27; temperature control for green brick, A (4) 152.
experimental, for clayware, A (3) 110.
for granular materials, P (4) 153.
for roofing tile, A (7) 257; artificial driers, A (5) 193.
for vitreous enamels, A (3) 97.
drying tunnel, P (8) 286.
electrically heated cylinders for liquid and pasty masses, A (7) 257.
gas-heated laboratory drying chambers, automatic temperature regulation, A (6) 224.
patent design, P (6) 227.
for porcelain enamel, review, A (2) 57.
vacuum drying oven, A (6) 226.
**Dry-mixing process** for whiteware and refractories, A (11) 359.
**Dunite** (olivine), preparation, A (2) 73.
**Du Pont plant,** semiworks of, A (2) 89.
**Dupor plate respirator,** A (4) 150.
**Duralite, French neutr" type,** A (3) 105.
**Dust apparatus.** See also *Dusts; Silicosis.*
air-dust removal type, P (7) 259.
baffle for separating dust from gases, P (6) 227; from air, P (6) 227.
blower and dust-suction hoses, A (10) 334.
centrifugal dedusting types, A (8) 272; dedusters, rules for efficiency tests, A (1) 30.
centrifugal type, for separating and collecting dust from air and gases, P (4) 153; for separating dust from gases, P (6) 227.
Cesco respirator, A (4) 165.
compressed-air cleaning, advantages, A (4) 151–52.
dark-field microscope dust counter and sampling device, A (4) 150.
dust arrester and cyclone exhaust fan in Windsor plant, A (10) 336.
dust-collector unit, A (9) 310.
dust confiner and collector for grinding and polishing machines, P (6) 208.
dust-laden air-treating type, P (10) 336.
dust-measuring device, A (10) 334.
Electrotor Meter, A (9) 310.
ergometer and recording spirometer for tests for silicosis victims, A (4) 165.
"fine-dust filter df 90," A (5) 203.
Greenburg-Smith impinger with Sedgwick-Rafter counting cells, A (9) 310; Hatch and Greenburg-Smith impingers, comparative tests made with, A (9) 309.
konimeters: circular, for dust sampling, B (7) 258; Devers type, for sampling in mines, A (6) 237.
**Dust apparatus** (*continued*)
midget impinger for collecting lead dust and fumes for chemical determination, B (11) 361; midget impinger for dust sampling, B (5) 194; midget impinger with hand-operated pump, B (7) 258.
in N. Y., list, A (8) 293.
ocular micrometer for dust counting, A (9) 310.
for powder and dust particle size and dust content tests, P (9) 319.
Pyrex-brand glass impinger, A (9) 309.
respirator, Dupor plate type, A (4) 150.
respirator for silicosis prevention, A (9) 311.
respirators, use and care, B (10) 344.
for sampling and dust determination in Ont. mines, types, A (6) 237.
Sedgwick-Rafter counting cells, A (9) 310.
U. S. Bur. Mines approved: respirator, A (11) 359; respiratory protective types, B (6) 227; types, B (7) 258–59.
**Dusts.** See also *Dust apparatus; Silicosis; Smoke.*
in air, effect of angle of drilling, B (7) 266.
in air and gases, centrifugal apparatus for separating and collecting, P (2) 79.
in air and gases, extraction by liquid spraying, P (10) 336.
Air Hygiene Foundation meeting, A (3) 121.
alumina, in china factories, A (2) 89, A (5) 204.
atmospheric, petrographic identification, B (6) 238.
blast, water-mist spray for control, B (7) 258.
breakage of dust particles by impact, studies, A (5) 192.
causing silicosis, chemical examination, A (9) 317–18.
character of, collection methods, A (7) 265.
coal and stone, textile wetting agents, A (1) 47.
concentration in air during wet drilling, B (7) 266.
control problems, B (4) 166.
"dust," definition, II, A (4) 136.
dust-filtering efficiency of human nose, A (6) 236.
dust-removal system, design and operation, A (3) 122.
electrostatic method of separation from by-product coke-oven gas, A (1) 28.
engineering design for elimination and control, A (1) 46.
extracting method, P (5) 194.
and fumes, industrial hazards, A (5) 203.
in gases, in chimney gases, removal, A (5) 195.
collection from cement kilns, P (1) 31.
filter efficiency in removal of, A (1) 29–30.
in flowing gases, separation, P (8) 286.
Lurgi cleaning and separation process, A (8) 287.
photoelectric smoke penetrometer, A (1) 29–30.
separating apparatus for, P (1) 31.
hazards and control in ceramic industry, A (6) 236.
industrial, characteristic properties A (2) 88.
composition of natural and manufactured abrasives, A (3) 91.
control methods, A (14) 166, A (9) 318.
discussion of studies, A (9) 318.
"labyrinth" sampling, A (2) 89.
porous solid filters for sampling, A (2) 89.
laboratory tests on movement, A (8) 293.
lead, and fumes, midget impinger for tests, B (11) 361.
in metal mines, control, B (1) 47.
microprojection method for counting impinger dust samples, B (6) 238.
mineral and clay, meter for measurement, A (2) 78.
mineral, hydrolysis of rock-forming types, A (2) 88–89.
mineral, reaction of living body to, A (8) 293.
in mines, sampling methods and determination, A (6) 237.
petrographic analyses, A (6) 237.
in potteries, collection process, A (10) 344.
quartz in, and deposits on human lung tissues, studies, A (6) 237–38.
quartz (free silica) in, chemical determination, A (10) 342.
silica, action on human system, A (10) 344.
silica, protector minerals in dusty industries, A (3) 122.
silica, in refractory plants, prevention, A (4) 165.
silica, solubility data, A (9) 319.
**Dusts** (*continued*)
silicate, tests on excretion of silica in human urine, A (7) 265.
and smoke in air, removal, A (2) 89.
stone, sources of danger, A (4) 165.
study of silicotic lung of earthenware worker, A (2) 88.
in vacuum system of power-pressing process, elimination, A (9) 308.
and water in compressed air, removal, A (10) 335.

**Earthenware.** See also *Glazes; Pottery; Stoneware.*
auxiliary fluxes with feldspar for, A (4) 147.
bodies for, P (2) 77.
discussion topics and defects, A (1) 26.
faience and garden ware, A (7) 255.
glazing, firing, and composition, P (1) 27; see also *Glazes.*
"Jomon-Doki," prehistoric, III, A (2) 53.
patent design for beanpot, P (2) 54.
and porcelain at Leipzig Spring Fair, A (4) 148.
processes and products in Germany, A (3) 108.
and semiporcelain, production, A (4) 147.
slips and glazes for, application, P (8) 286.
unglazed, prevention of cracking, A (5) 191.
vitreous, fireclay or hard, for German sanitary ware, A (11) 357.
zinc-glazed, A (2) 77.
**Earths.** See also *Clays; Soils,* and cross-references.
alkaline-earth carbonates, emanation method for thermal behavior tests, I–II, A (11) 365–66.
apparatus and method for boring into and treating, P (10) 341.
bleaching, natural and synthetic, colors of, chemistry, I–II, A (11) 363; see also *Clays, bleaching.*
ceramic plastic, and clays, uniform classification, A (6) 231, A (8) 290.
diatomaceous, geological conditions in Czechoslovakia, A (7) 261.
fullers' (bleaching clays), Bur. Mines data, B (11) 364.
kaolin and refractory, of Larnage-Doueras, A (2) 72.
natural and artificial plastic type, A (2) 82–83.
porcelain, chemical analyses, A (11) 363.
rare, crystal chemistry of simple silicates, A (1) 41–42.
effect on ultra-violet light absorption of glass, A (11) 350.
for glass industry, A (8) 274; for selenium pink glass, A (5) 172.
quantitative estimation by arc spectra, A (10) 342.
Sc studies, II, A (2) 86.
rare-earth salts, precipitation and *p*H studies with glass electrode, A (8) 291.
**Ebonite disks** for abrasive apparatus, P (7) 241.
**Economics.** See *Management.*
**Edaphology,** text on nature and properties of soils, B (1) 40.
**Education.** See also *Ceramic education,* and cross-references.
ceramic engineering as a career, A (4) 165.
outline for employee education at Servel, Inc., A (3) 122.
technological, forecast, A (10) 344.
**Efflorescence.** See also *Brick, defects in; Clayware, defects in.*
in ceramic materials, prevention, A (7) 252; of ceramic products, studies, A (6) 219–20.
source of soluble salts in firing hollow brick, A (2) 81.
and staining of brickwork, wick test, B (1) 18.
**Einstein relation** for agglomeration of particles, A (8) 290–91.
**Elasticity,** modulus of, apparatus for tests on magnesite refractories, I, IV, A (2) 73; II–III, A (3) 104.
**Elastico-viscous properties** of soda-lime-silica glass near transformation-point temperature, A (8) 273; discussion, A (9) 303.
**Electric cylinders** for drying liquid and pasty masses, A (7) 257.
**Electric discharge lamps.** See *Lamps.*
**"Electric eye"** in industrial process control, A (1) 28.
**Electric firing** and apparatus. See *Firing; Furnaces, electric; Furnaces for glass production, electric; Kilns, electric.*
**Electric heating** in ceramic industry, application, A (3) 112; in ceramic industries, review, A (5) 195

**Electric heating elements,** life of resistance wires for, A (8) 284.
**Electric resistors,** Ni-Cr alloys for, A (1) 29.
**Electrical conductivity** of thin metallic films: cesium and potassium on Pyrex-brand glass surfaces, II, A (11) 350.
**Electrical conductors,** tungsten or molybdenum, for quartz glass, vacuum-tight sealing of, P (9) 306.
**Electrical discharge apparatus,** glass composition for, P (1) 15.
**Electrical plants** for enamel industry, A (2) 57.
**Electrical production** of industrial gases, A (10) 336.
**Electrical resistance** of porcelain, A (2) 76; of alkalis and system $MgO$–$Al_2O_3$–$SiO_2$, A (3) 108.
of talc–kaolin system, A (3) 109.
**Electrical resistivity** of glass with iron oxide, A (9) 303.
**Electrodes,** ashless and gasless solid coke for, P (8) 286.
core, process, P (10) 337–38.
glass, for differential titration, A (11) 360.
method, A (10) 335.
for rare-earth salts studies, A (8) 291.
rugged form, A (5) 180–81.
sensitive glass types, A (5) 180–81.
thermodynamic theory, A (8) 292.
simplified quinhydrone, use, A (10) 335.
**Electrodialysis** of soils, III, A (8) 291.
**Electrolyte adsorption** by aluminum hydroxide sols, mechanism, A (9) 316.
**Electrolytic process** and concentration methods for determination of lead on water, A (5) 199–200.
for descaling or cleaning metals, P (2) 54.
**Electron diffraction** for metallurgical research, A (4) 161.
**Electron furnace** for temperatures to 4500°F, A (6) 225.
**Electron microscopy.** See *Microscopy.*
**Electro-pickling process** (Ferrolite), tests, A (9) 299.
**Electroplating,** polishing and buffing methods, A (10) 321.
of porcelain enamel, process, A (3) 95–96.
**Electrostatic process** for glaze salvaging, A (3) 111.
**Electrostatic separation** for by-product coke-oven gas, A (1) 28; electrostatic solid separations, process, A (10) 334.
**Electrotor Meter** for counting and weighing dust and smoke particles, A (9) 310.
**Elements,** madavium No. 87, discovery, A (4) 161.
spectrum-analytical tests for detection, A (4) 163.
**Elford and Ferry method** for pore volume in branching and integrated canal systems, XIX (*c*), A (9) 315.
**Ellestadite** in apatite groups, A (4) 158.
**Elutriation** for material classification, P (1) 31.
method for particle measurement, A (10) 335.
**Elutriation analysis,** pipet apparatus, A (11) 360.
**Elutriators,** hydraulic, short-column type for subsieve sizes, B (6) 227.
water, with screen tests for fineness of milled enamels, A (10) 325.
**Emanation method** of Hahn for thermal behavior of alkaline-earth carbonates, I, A (11) 365–66.
**Emery,** grading apparatus, P (10) 322.
Samos deposits, A (9) 295.
**Enamel apparatus.** See also *Cleaning apparatus; Drying apparatus; Furnaces; Kilns; Spraying apparatus.*
for cleaning, Bonderizing, spraying, and firing of Shelvador cabinets, A (6) 213.
collapsible tube machine, P (5) 175.
for enamel application to can bodies, P (11) 349.
for firing large porcelain enamel sheets, A (1) 9; furnace for, A (2) 57.
for handling refrigerator cabinets, A (2) 58.
Hydro-Filter spray booth for straight-line process, A (6) 213.
patent design, P (7) 246.
shop production problems, A (8) 271.
for sinks, P (8) 272.
thickness gage, A (9) 299.
**Enamel industry,** advances in 1937, A (4) 134.
electrical plants for, A (2) 57.
in Germany, patent literature review, A (1) 9, A (8) 271; history of vitreous enameling, A (10) 325; meeting at Leipzig, A (3) 97.
manufacturing costs, formulas for, A (2) 57.
porcelain, 1937 progress, A (2) 57.
**Enamel industry** (*continued*)
shop production problems, A (8) 271.
technical development and patent literature, A (1) 9.
**Enamel plants,** artificial lighting, A (11) 367.
in Australia and U. S., revamping of, I–II, A (6) 213; III–IV, A (11) 349.
enamel wastes reduction, A (1) 9–10.
National Enameling and Stamping Co. furnace, A (4) 135.
Norge development of porcelain enamel, A (4) 134.
power distribution for wiring, A (9) 300.
Prizer-Painter Stove Works, history and development, A (1) 9.
removal of smoke and dusts, A (2) 89.
tools and equipment and control methods, A (11) 349.
traveling stock rooms in space above working areas, A (2) 58.
**Enamels.** See also *Art and artware, enamels; Enamel apparatus; Glazes; Metals for enameling; Opacifiers; Pickling; Structural materials, enameled.*
acid resistance of: comparative tests, A (2) 57; under high pressure, studies, A (9) 300.
acid-resistant: factors influencing properties, A (2) 57; fluorspar as flux, A (11) 348; $TiO_2$ addition, A (6) 212; types, A (11) 348.
acid-stable, acid attack, ratio of refractory constituents *vs.* fluxes, A (5) 173.
acid-stable: effect of boiling acids, A (5) 174; soda *vs.* borax in, A (5) 173.
acid-stable and nonpoisonous, raw materials for, A (5) 173.
adherence to iron, theories, A (11) 347–48; random experiments, A (10) 325.
architectural uses at Paris International Exhibition, A (2) 56, A (9) 300; artistic, at Paris Exhibition, A (2) 56.
barium carbonate as flux, A (1) 7.
batches for: feldspar and alumina, A (4) 134; tin oxide, A (1) 8.
for bathtubs. See *Sanitary ware.*
behavior, in contact with liquids at high temperatures and pressures, A (6) 212.
borax in cast-iron and coat types, A (11) 348.
borax, effect, A (5) 173.
borax substitute, polyphosphate, P (5) 176.
borosilicate in, use, P (6) 214; borosilicate frit, A (5) 173.
for buildings. See *Structural materials, enameled.*
cadmium sulfide and selenium for red-brown colors, A (11) 349.
cast-iron, *vs.* coat types, borax in, A (11) 348.
for cast iron, properties, A (1) 8.
cast-iron distilling apparatus, A (6) 213.
chilling methods, A (5) 174.
chiolite as opacifer, A (11) 349.
clays for mill additions, data, A (9) 300.
for clayware, process, P (8) 294.
clouded, production, P (6) 213.
coating capacity of, A (6) 212.
coatings of, and vitrified ceramic linings for germ protection, A (5) 204.
cobalt oxide: for enamel adherence to iron, A (11) 347–48; for sheet-steel ground coats, A (5) 174–75.
color tone of, factors in, A (5) 175.
colored: black, for cast iron, A (2) 56; ceramic pigments, classification, A (6) 209; red and brown, composition, A (11) 349.
colorless, composition, P (9) 301.
composition, P (10) 325.
consistency of, relation to controlled variables of frit composition, II, A (6) 213.
for cooking (kitchenware): baking pan set, P (7) 246; centering pan set, P (7) 246; seamless baking pan set, P (7) 246.
colors for, A (1) 10.
food regulation test, A (1) 8.
free from arsenic, lead, and antimony, A (2) 57.
glass-enameled steel, A (1) 8.
Good Housekeeping Inst. test for porcelain ware, A (8) 272.
New South Wales regulation, A (2) 57.
sheet iron, batch for cover coats, A (8) 271.
sheet-metal heating and cooking vessels, P (5) 176.
for copper ware, process, A (5) 174.
for curved surfaces, studies, A (2) 57.
decorative, process, P (5) 172.
deënameling, process, A (1) 8; see also *Deënameling.*
**Enamels** (*continued*)
defects in, black-edging problems, A (6) 212.
black specks in cover-coat types, A (1) 7; black spots, cause, A (4) 134.
blistering effect of microchill, A (3) 96; blistering and pinholing, gas evolution during fusion as cause, A (3) 96.
carbonaceous facings, effect, A (11) 348.
caused by inhibitors in pickling, A (11) 348.
chipping, A (6) 213; in cabinet design, A (1) 8; safeguards against, A (1) 7.
copperheading, A (6) 212; of sheet-steel ground coats, A (6) 212.
crazing and flaking of majolica fireplaces, A (1) 8.
damaged coatings, treatment, A (5) 174.
on edges and curved surfaces, prevention, A (2) 57.
effect of raw sheet-iron ware for, A (2) 58.
fishscaling: in black enamels, A (1) 8; effect of sheet steel on, A (4) 135; sheet-iron types, causes, A (2) 58, A (3) 96; Ultra-Sil as preventive, A (3) 96.
flaking, prevention, A (6) 212.
hair cracks, prevention, A (5) 173.
Krynitsky and Harrison, Lang, and Vielhaber studies, A (11) 348.
from mixing and melting, A (8) 272.
patents on elimination of, A (11) 348.
reboiling, studies, A (5) 175.
rust spots *vs.* fishscale, effect of rapid drying, A (11) 348.
scratched or marred, reclaiming of, A (1) 9.
types, in Canada, A (1) 8.
water attack on, A (5) 173; water-soluble silicates, effect, A (3) 97–98.
dry cooling method, for fused enamel, P (10) 325.
drying process to prevent rust spots, A (11) 348.
dry-process grinding, effect on working properties, A (10) 324.
for edges of ware, methods, A (4) 134.
elasticity, pressure resistance, and tensile strength of, A (6) 213.
enameled iron, decoration, P (6) 211.
enameled plaque, method, P (5) 176.
in England, history of commercial production, A (9) 299.
etching baths for, tests, A (5) 175.
expansion coefficient of, calculations for, A (5) 173.
feldspar in, effect, A (5) 174.
fishscales on. See *Enamels, defects in.*
flaking of, composition for prevention, A (6) 212.
fluxes for. See *Fluxes.*
frit composition, P (1) 10.
frits for: borosilicate, A (5) 173; for white-clouded iron enamel, P (3) 98; white-clouded vitreous type for ironware, composition, P (8) 272; see also *Frits; Glazes.*
fused silicic acid, quartzose glass for temperature resistance, P (6) 213–14.
German patents on processes for, A (8) 271.
and glazes, P (10) 325; see also *Glazes.*
gloss meter, construction and use, A (10) 334.
gold substitute for, composition, P (5) 176.
grain size of raw materials for, A (5) 174.
gray-spotted, A (11) 348.
ground-coat, chemical determination of metallic particles and iron, nickel, and cobalt oxides, A (10) 324.
ground-coat, drying process, A (11) 348.
ground-coat enamel suspension for improvement, A (9) 300.
ground-coat, for sheet-steel, A (5) 174–75; adherence of, relation to thickness and yield value, A (6) 213; adherence studies, A (10) 325.
hair cracks or hairlines. See *Enamels, defects in.*
Hamburg enamel school, history, A (9) 303.
hardness of, scratch-resistance tests, A (11) 348.
heat-resistant, fused silicic acid for, P (6) 213–14.
history of Chinese influence, A (4) 134.
history and evolution, A (11) 348.
impact strength and resistance tests, A (11) 348.
iridescent, barytine for, A (1) 7.
for iron, process, P (10) 325; nickel-dip treatment, A (7) 245.
kitchenware. See *Enamels for cooking.*
leadless, for cast iron, A (1) 7.

**Enamels** (*continued*)
liquid, iron in, magnetic separator for removal, A (2) 57.
luster on surface, resistance tests, A (7) 245.
lustrous, barium carbonate for, A (1) 7.
magnesia in, effect, A (11) 348.
majolica. See *Majolica*.
manufacture, P (11) 349.
on metallic objects, method and apparatus for removal, P (7) 246.
metallic oxides in mill, effect, A (5) 174.
metallized, plastic clay for, A (3) 93.
mill additions: metallic oxides, effect, A (5) 174; setting-up agents and opacifiers, A (10) 324–25; types and data, A (9) 300.
milled, fineness distribution, use of water elutriator with screen test, A (10) 325.
mill-room practice, data, A (10) 325; standards, A (10) 325.
"mineral spar" in, effect, A (3) 97.
mixing and melting of, defects from, A (8) 272.
one-cover coat, data, A (9) 299–300.
opacifiers for. See also *Enamels, vitreous; Enamels, white; Opacifiers.*
opacifiers for acid-resistant types, ceric and antimony oxides, A (11) 348.
opacifiers, super-opaque enamels, A (10) 324–25.
opacifiers for, $ZrO_2$, P (5) 176; $ZrO_2$ for vitreous enamels, P (3) 98.
opacity, determination, A (11) 349.
opaque, and glazes, composition, P (5) 175–76.
optical specification of vitreous types, A (2) 57.
for panels for architecture, A (10) 324.
patent design for combinet, P (2) 54.
patent literature, German, A (1) 9, A (8) 271.
patents on heat-stable coatings, deënameling, ZnS as opacifier, and gas opacification, A (4) 134.
pigment additions, A (11) 347; materials and compounds for, A (6) 209.
poisons, New South Wales regulation on arsenic, lead, and antimony, A (2) 57.
polyphosphate as borax substitute in, P (5) 176.
porcelain. See also *Structural materials, enameled; Structural materials, porcelain enamel.*
acid-resistance test for, B (4) 136.
for architectural use, A (4) 135.
in Australia and in U. S., I–II, A (6) 213; III–IV, A (11) 349.
automatic spraying of, A (2) 56.
cables, A (10) 325.
for cast-iron pumps, A (10) 325.
characteristics of iron and steel for, A (2) 56.
design of metal parts for, A (1) 8.
drawing compounds for use with, A (9) 299.
drying process, A (2) 57.
for electric substations, A (4) 136.
electroplating process, A (3) 95–96.
endless-flow process for frits, A (9) 299.
Ferro method for flat sheets, A (9) 300.
gas immersion heaters for pickle room, A (8) 271.
Glassteel diffuser for mercury lighting, A (9) 300.
heat transfer in metals and other materials, B (9) 301.
history, A (4) 134.
for kitchens and baths, A (8) 271–72; see also *Sanitary ware.*
manual, B (2) 59.
for metal machine parts, A (9) 299.
for photographic finish, A (10) 325.
Porcelain Enamel Inst. activities, A (10) 324.
reclaiming scratched or marred ware, A (1) 9.
stainless steel luminous tubing, A (2) 58.
trade mark for fired organic paints *vs.* porcelain enamel, A (3) 97.
quartz and feldspar content, A (5) 174.
raw materials for: grain size, A (5) 174; grinding process, A (5) 174.
raw materials for, quartz and feldspar in, A (5) 174.
recoat, stabilization of reflectance and color, B (9) 301.
research in 1936, A (11) 349.
review as industrial material, and uses, A (6) 213.
Russian artware, A (8) 270.
sales bulletin, B (3) 98.
sanitary ware. See *Sanitary ware.*
scratch-resistance tests, A (11) 348.
Setit for sheet-iron ground-coat improvement, A (9) 300–301.
**Enamels** (*continued*)
sheet-iron, black spots in, cause, A (4) 134.
for sheet-iron and cast-iron ware, control methods, A (11) 348.
sheet-iron panels, methods for setting up, clip-strip and Haskelite systems, A (2) 57; batten and molding process and flanged sheets, A (4) 135; other methods, A (9) 300.
for sheet-iron ware: edges, A (2) 57; white-clouded vitreous enamel for, P (5) 176.
silica in, chemistry, A (5) 174.
slips: ground-coat, system for suspension improvement, A (9) 300; water-soluble constituents, A (3) 97; see also *Slips.*
sodium fluosilicate as opacifier, A (2) 58.
softening point, A (7) 245.
special, composition, A (5) 175.
spray method for enamel coats, A (1) 7.
stannic oxide as opacifier, B (7) 246; crushing and grain size, A (11) 349.
for steel. See *Structural materials, porcelain enamel.*
strontium-calcium - magnesium - borosilicate to replace borax, A (5) 173.
structure of, data, A (5) 175.
technical development, German patent literature, A (1) 9, A (8) 271.
thickness measurements on iron bodies, P (10) 325.
tin oxide in, A (1) 8.
titanium dioxide in, data, A (11) 349.
translucent and mat, composition, A (8) 271.
vitreous, acid-resistant type, P (1) 10.
automatic slip spraying of, A (8) 272.
cast iron for, gas evolution as cause of defects, A (3) 96.
clouded, production, P (3) 98.
for copper, A (2) 59.
design of sheet- and cast-iron parts for, A (3) 96.
drying of, principles and practice, A (3) 97.
for electric discharge lamps with metal vapors, P (8) 272.
frit consistency studies at or near firing temperatures, A (4) 134.
in Germany, review, A (10) 325; electric heating in Germany, A (6) 213.
heat-resisting muffle equipment, A (7) 245.
Inst. of Vitreous Enamellers, A (10) 325.
mold facings for cast iron, effect, A (11) 348.
nonoily, composition, P (3) 98.
opacifiers, P (8) 272.
opaque, process, P (3) 98.
optical specification, A (2) 57.
or porcelain, methods, A (3) 97.
process, P (2) 59, P (5) 176.
products of, P (9) 301.
sandblasting process, A (10) 325.
temperature control, apparatus, A (10) 324.
white-clouded, composition, P (5) 176; frit for, P (8) 272.
zirconium oxide opacifiers, P (3) 98.
waste, methods for use, A (4) 136.
wastes of, reduction, A (1) 9–10.
wear resistance of surfaces, A (7) 245.
wet and powder types, opacifiers, A (2) 57.
white. See also *Enamels, opacifiers for; Opacifiers.*
white, composition, P (7) 246; white ground coats, composition, A (1) 10.
white-clouded, iron, frit for, P (3) 98.
zinc oxide in: effect, A (5) 175; and zinc white in, production, A (6) 231.
**Enantiotropic transformation** of $BaCO_3$ and $SrCO_3$, II, A (11) 366.
**Engineering** as career, phases, A (1) 46.
engineer's year-book of formulas, rules, tables, and data, 1937, B (2) 90.
relation to economic problems, A (4) 165.
**Engineers,** employment security in engineering profession, A (7) 266.
requirements, A (7) 266.
**English Society of Glass Technology,** 21st anniversary, A (9) 304.
**Engobes,** adherence to ceramic bodies, studies, A (4) 146.
for brick and tile production, A (5) 184.
colored, and technique, A (6) 223.
**Ensz method** for gas analysis of bubbles in glass, changes in, A (2) 60.
**Enthalpy,** specific, of low-pressure steam, A (6) 238.
**Equilibrium constant charts,** vaporization data on crude oil-natural gas system, A (1) 34.
**Equilibrium diagrams,** $CaO \cdot MgO \cdot SiO_2$–$MnO$–$TiO_2$, A (4) 161.
studies of binary systems $CaO \cdot SiO_2 \cdot TiO_2$–
**Equilibrium diagrams** (*continued*)
$MgO \cdot TiO_2$, $CaO \cdot MgO \cdot 2SiO_2$–$MnO \cdot TiO_2$, and $CaO \cdot SiO_2$–$2CaO \cdot Fe_2O_3$, A (11) 365.
of system $Na_2SiO_3$–$PbSiO_3$–$SiO_2$, A (1) 43.
and Trona process, A (10) 338.
**Equilibrium relations** of $K_2SiO_3$–$SiO_2$, A (4) 161.
**Equipment.** See *Apparatus,* and specific types of apparatus and equipment throughout index.
**Etching** of glass. See *Glass, decorated; Glass, etching of.*
**Ethyl silicate preparations,** applications, A (4) 131.
**Ethylene glycol method** of Schläpfer and Bukowski for determination of uncombined lime in Portland cement, A (5) 200.
**Etruscan art.** See *Archeology.*
**Evaporators** for high-pressure steam boiler, A (7) 265.
**Excavating apparatus,** Calyx drills, A (1) 27.
and scrapers, A (4) 150.
single bucket excavator, A (4) 150.
**Exchange capacity** of Md. soils, effect of hydrogen peroxide, A (1) 37.
**Exhibitions.** See also *Museums.*
antiques exposition, Sèvres urns at, A (9) 296.
Foundry Trades' Exhibition, refractories at, A (11) 354–55.
Greater Texas and Pan American, pottery at, A (3) 122.
Leipzig Spring Fair: abrading machines, A (3) 91, A (10) 321, A (11) 346; Jena heatproof glass at, A (6) 216; porcelain and earthenware at, A (4) 148.
Lorimer glass, English, Irish, and American, A (8) 269.
New York World's Fair in 1939, ceramic industry at, A (8) 292.
Paris International: ceramics and glass at, A (8) 269; glass brick, brown porous, A (8) 274; porcelain enamel in architecture, A (2) 56, A (4) 135, A (9) 300.
Parish-Watson Galleries, Chinese porcelains, A (7) 243.
Sixth National Ceramic, A (1) 47.
Van Baarn Galleries, stained glass, A (5) 171.
**Expansion,** linear, of ceramic ware, between ambient temperature and 1000°C, B (7) 260–61.
**Explosives.** See also *Mining.*
Annual Rept., 1937, B (7) 266.
detonation of, use of high temperatures and high pressures for artificial minerals, A (7) 258.
permissible, active list, B (5) 194.
**Expositions.** See *Exhibitions; Museums.*
**Extrusion apparatus,** extrusion presses for de-airing clays, P (10) 336.
**Extrusion process** for pressing refractories, A (9) 308.

**Faick and Finn studies** on molecular refractions of glass, A (10) 326.
**Faience.** See also *Art and artware,* and cross-references.
Dresden, history, A (11) 347.
in France, plant operations of, A (8) 269.
and garden ware, manufacture, A (7) 255.
history of Egyptian tile, B (1) 4.
at Kashan, A.D. 1301, A (2) 54.
**Feeding apparatus** and automatic weighing machine, P (2) 79.
**Feldspars,** albite feldspar from Schmirn, chemical analysis, A (1) 35.
artificial conversion to pyrophyllite, A (2) 82.
with auxiliary fluxes for earthenware bodies, A (4) 147.
Bur. Mines Rept., B (9) 315.
cathodo-luminescence spectra of, A (9) 313.
detrital authigenic, occurrence, A (4) 157.
feldspar ore, German, flotation and magnetic separation for preparation, A (1) 47.
in glass, effect, A (1) 12; tests, B (4) 140.
Hagendorf, for porcelain glaze, A (8) 283; intergrown Hagendorf, preparation, A (1) 39.
from pegmatites, data, A (6) 230.
plagioclase, chemical analysis and optical orientation, A (1) 37.
preparation, P (3) 117; purification process, P (3) 117.
pure potash type, density and chemical composition, A (1) 36.
sources of, and kaolin deposits in Europe, data, A (5) 197.
in Maine, A (3) 115.
in Minn., calcic feldspar deposits, A (2) 82.
in North Caucasus, A (7) 261.

**Feldspars,** sources of (*continued*)
plagioclase, in Alaska, A (10) 338.
soda-rich, in S. D., minerals of, A (3) 116.
in U. S., B (3) 117.
**Ferrari cements** (brownmillerite), data, A (9) 298.
**Ferric oxide**–alumina, system, data, A (1) 41.
and barium carbonate, reactions between, in presence of oxygen, I, A (10) 342–43.
–CaO, studies on celite in, I, A (4) 163.
–$K_2O$-4$SiO_2$–$SiO_2$, refractive index studies, A (10) 326.
**Ferro endless-flow process** for frits, A (9) 299.
**Ferro method** for flat porcelain enamel sheets, A (9) 300.
**Ferrofilter,** Frantz type, use, A (11) 364.
**Ferrolite,** electro-pickling process, tests, A (9) 299.
**Ferrous oxide**–$Al_2O_3$, studies, A (1) 41, A (5) 202.
–$Al_2O_3$–$SiO_2$, diagrams and studies, A (9) 317.
–CaO–$SiO_2$, review of researches and test methods, A (5) 202.
–CaO–ZnO–$SiO_2$, zinc-bearing slags in, fusibility, A (6) 232.
–MnO–$Al_2O_3$, studies, A (5) 202.
in rocks and minerals, determination, A (1) 42.
**Ferrous titanite**–$TiO_2$, $FeTiO_3$–$Fe_2O_3$, $FeTiO_3$–$Fe_3O_4$, and $FeTiO_3$–$Fe_2O_3$–$TiO_2$, studies, A (7) 261.
**Fertilizers,** $P_2O_5$ in, determination, A (3) 119.
**Fiber glass.** See *Glass, fiber.*
**Fiber-weight method** for glass surface tension tests, A (9) 304.
**Fibrous materials,** fine-grained, glassed-walled chamber for continuous tests, A (7) 257.
**Filler clays.** See *Clays.*
**Films,** adsorbed moisture, on glazed porcelain surface, A (11) 358.
thin metallic, electrical conductivity on Pyrex-brand glass surfaces, A (11) 350.
**Filter polarizers,** use, A (5) 193.
**Filtering apparatus** (filters), calculation for color temperature conversion, A (2) 60.
Ferrofilter, Frantz type, use, A (11) 364.
filter-press plates, methods and materials for coating, A (4) 153.
filter presses, P (10) 336; cloths for, P (7) 259; hydraulic opening and closing device for, A (4) 151.
"fine-dust filter df 90," construction, A (5) 203.
glass. See also *Glass, filters.*
glass, porous, application, A (8) 274.
glass air filters, A (1) 12.
glass fabric for gas filtration, A (9) 303.
light, effect on Neophane glass color tests, A (11) 350.
metal air-type for air-conditioning plants, A (10) 333.
naphthalene, for petrographic examinations of dusts, A (2) 88.
polarizing, for glass strain determination, A (5) 177.
porous: glass particles for, P (7) 250; solid, for sampling industrial dusts, A (2) 89.
rotary-type, P (8) 286, P (9) 312.
salicylic acid: for "labyrinth" dust sampling, A (2) 89; and thermal precipitators, use, A (2) 89.
ultrafilters of silicon carbide, A (1) 44.
**Filtration.** See also *Air conditioning; Dust apparatus; Filtering apparatus.*
percolation, bauxite as absorbent, A (6) 229.
principles and practice, A (3) 110; test data and filters, A (10) 334.
for softening water, A (8) 289–90.
of solid-bearing liquids, P (1) 32.
**Filtration analysis** for water elimination in casting slips, A (5) 191.
**Filtrol,** bleaching clay, A (4) 155.
**Fineness.** See *Grain size,* and cross-references.
**Finn-Kiekotka method** for determining silica in clays, A (3) 120.
**Fire clays.** See *Clays; Refractories.*
**Fireproof building material,** P (8) 279.
**Firestone** as refractory material, properties, A (4) 143.
**Firing.** See also *Drying; Drying apparatus; Flames; Fuels; Furnaces; Kilns; Ovens.*
in batch kilns, procedure, A (11) 362.
of brick: black, P (4) 154; fuels for, A (11) 362; kilns and plants for, P (3) 114.
ceramic: steatite, data and methods used, VII; effect of firing conditions on structural changes, VIII; effect on sintering processes, IX; effect on properties of steatite, X, A (2) 81.
of ceramic ware in Canada, use of coal, A (1) 32.
of ceramic ware, liquefied petroleum gases for, A (11) 362.
of clay, clay shale, etc., P (1) 32.
of colors on glass and ceramic ware, electric furnaces for, A (5) 195.
of continuous decorating kilns, application of recirculating gas-tube firing system, A (1) 32.
of decorations on porcelain and glass, Riposta electric furnace for, A (3) 112.
and drying of ceramic ware, gas for, A (1) 33; studies, B (3) 113.
electric: of fine ware, cost data, A (11) 362; of steatite products, studies, VII–IX, A (2) 81.
electric furnaces and apparatus, P (1) 35; efficiency data, A (1) 32–33.
electric heating in the ceramic industry, A (1) 32–33, A (3) 112, A (5) 195.
of electrical porcelain, data on electric kilns, A (1) 34.
of enamel furnaces, regenerative and recuperative methods of heat recovery, A (4) 135.
of enamels, electric heating data in Germany, A (6) 213.
of enamels in gas-fired radiant-tube furnace, A (1) 7, A (4) 134–35, A (11) 348.
of enamels, oven with continuous conveyer, P (10) 325.
of enamels, vitreous, review of radiant-tube firing, A (11) 348.
flame temperature calculation, apparent specific heat and its application to, A (3) 112.
fuel economy in melting and reheating furnaces, A (1) 33.
fuel oil for, detailed studies, A (1) 33, B (3) 113–14.
fuel technology, aerodynamics as basis for study, A (4) 153.
gas-burner systems, classification, A (6) 227, A (7) 259.
of hard porcelain, defects caused by, A (8) 282.
high-temperature, brick coated with Fe oxide thin layer, P (8) 281.
high-temperature process, P (3) 114.
of hollow brick, source of soluble salts in, A (2) 81.
hot-blast temperature, automatic control, A (1) 29.
of insulating furnaces for saving fuel, A (1) 46.
Lengersdorff tunnel kiln for short firing schedules, A (3) 112–13.
Lenox gas decorating kiln, A (3) 113.
oil burners, types, B (3) 113; oil fuels and burners, studies, B (3) 114.
physics of, data, A (1) 33–34.
Portland cement in shaft kilns, theory, A (8) 271.
of shale paving brick, natural gas for, A (3) 113.
of structural materials, tunnel kiln for, A (1) 34.
thermal tensions and graphic representation of, A (1) 44.
of tile, electric furnaces for, A (7) 260; of tile and grinding wheels, electric heat for, A (3) 112.
of tunnel kiln, open flame *vs.* muffle, I, A (11) 362.
of vitreous enamel slips, studies, A (4) 34.
**Flames,** blue, theory, A (6) 228.
chemical reactions in, identification, A (6) 228.
flame test, modified, for boron estimation, A (10) 342.
from gas burners, velocity, A (3) 113.
open, temperature measurement methods, A (11) 362.
speed of propagation in homogeneous combustible mixture under constant pressure, A (6) 228.
temperature: experimental tests, A (6) 227–28; use of apparent specific heat for calculation, A (3) 112.
temperature calculation: at constant pressure, A (11) 361; by method of successive approximations, A (11) 361–62.
velocity of, from gas burners, studies, A (3) 113.
**Flashing** of brick or tile, P (7) 257.
**Flint, Caolad,** in Ireland, A (4) 155–56.
**Flint clays** in Mo., studies, B (1) 40.
**Flocculation tests** on pozzuolanas, II, A (4) 132.
**Flocculator,** sonic, as fume settler, B (11) 365.
**Flooring materials,** semiresilient ceramic tile, P (7) 257; see also *Tile.*
**Florenskil method** for determining porosity of porcelain, A (9) 310.
**Flotation** of complex molybdenum-vanadium ores from Ariz., B (6) 227.
for concentration of low-grade magnesite ores, B (11) 364; of nonmetallic minerals, P (3) 117.
elements in practice of, A (6) 230.
froth: and agglomerate tabling of nonmetallic minerals, A (4) 150; control, and reagents for, A (6) 230; effect of by-product silica, A (4) 155.
froth-flotation concentration of minerals and ores, P (2) 79, P (2) 80; for concentrating oxidized ores, P (10) 341.
fundamentals, A (1) 28; progress report, B (8) 286.
of langbeinite from potash, B (4) 159.
and magnetic separation for German feldspar ore, A (1) 47.
for measuring glass density with all-glass apparatus, A (4) 148.
of nonsulfidic minerals, A (5) 193.
separation, air process, P (2) 79.
separation of substances by, A (6) 238.
sodium silicate as reagent, A (5) 193.
wetting agents, B (6) 227.
**Flow.** See also *Viscosity; Fluids; Plasticity.*
in viscous liquids, transverse and laminar measurements, A (7) 264.
of water and compressed air in pipes, charts, A (8) 284.
**Fluids,** behavior in theory and practice, B (6) 227.
fluid pressure regulator, P (5) 194; fluid pressure or velocity in pipe line, orifice for measurement, A (10) 334.
and heat, flow principles, B (9) 319.
laws of fluid motion in cylindrical agitation systems, A (1) 31; particles in, law of motion, A (8) 284.
resistance, laws, A (8) 284.
viscosity, Reynold's number for units of, A (4) 164.
**Fluorescence** of glass, studies, A (7) 247, A (10) 326; for glass structure tests, A (9) 302.
principles, "Wood's light" rays, A (4) 159–60.
**Fluorescence indicator** in glass, Na uranate for, A (6) 214.
**Fluorescence tests** of cements for determining grade of, A (6) 211.
**Fluorescent glass,** composition, P (6) 218.
**Fluorides,** effect on precipitation of phosphoric acid by molybdic acid, A (3) 119.
as mineralizers, effect on synthesis of oxides, silicates, and aluminosilicates, A (2) 84.
**Fluorine** and boron, refractive indices and dispersions of volatile compounds of, A (4) 162.
determination in presence of amorphous silica, Villard-Winter method, A (2) 84.
**Fluorite,** paragenesis and color studies, A (1) 38.
**Fluorspar** (calcium fluoride), Bur. Mines Rept., B (9) 315.
flotation to high concentration, A (11) 360.
in Ill.-Ky. district, B (11) 364.
occurrence and use, A (10) 338.
**Fluosilicates,** potassium, rubidium, cesium, and thallium, crystal structure, A (2) 84.
**Fluxes,** auxiliary, and feldspar for earthenware body, A (4) 147.
in cupola linings, effect, A (10) 330.
**Foam formation** in glass, studies, A (1) 10.
**Foam-type fire extinguisher,** portable, A (1) 31.
**Foamy structure** of lightweight building materials, A (5) 184.
**Forsterite** and periclase from magnesium silicates, A (1) 23.
**Foshallasite** in Chibina tundra, A (7) 261.
**Foundries.** See also *Refractories for foundries; Refractories for furnaces; Refractories for steel production.*
abrasives for grinding wheels in, A (1) 1.
coating and ramming materials for refractory mortars, B (7) 255.
grinding wheels for, duplex high-speed machine, A (6) 207.
iron, spectrographic technique, A (8) 285.
multirotary blasting table, A (1) 2.
steel, refractories for, A (8) 281; steel casting design data, A (10) 335.
**Foundry sands.** See *Sands.*
**Fourcault apparatus,** tank furnaces, comparison, A (7) 247.
**Fourcault glass.** See *Glass, Fourcault.*

**Fourier analysis** of X-ray patterns of soda-silica glass, A (8) 273.
**France, raw materials** for ceramic building materials in, A (5) 198; refractories raw material deposits in, A (5) 186.
**Frank viscometer,** modified, construction and operation, A (5) 194.
**Franklin Institute,** A (7) 265.
**Frantz isodynamic magnetic separator** and Frantz ferrofilter, A (11) 364.
**Franz method** for scratch hardness, A (1) 1.
**Frauenhofer, Joseph,** work in optical glass, A (4) 139.
**Freezing test** for brick strength tests, A (5) 184; see also *Weathering.*
**Frenkel-Andrade equation** for viscosity studies of various liquids, A (10) 327.
**Frits.** See also *Enamels, frits; Glazes.*
aluminous, rational analysis by lime and sodium carbonate process, A (1) 44.
endless-flow process, A (9) 299.
lead, and fritted glazes, studies, B (1) 26.
leadless cast-iron type, A (6) 213.
solubility, controlled variables of frit composition and relation to enamel consistency, II, A (6) 213.
vitreous enamel, consistency at or near firing temperatures, A (4) 134.
**Froth flotation.** See *Flotation.*
**Fry, L. A.,** atomizing process for underglaze color work, A (11) 347.
**Fuel apparatus,** feeder for, P (3) 114; see also *Firing,* and cross-references.
**Fuel-oil ash.** See *Ashes.*
**Fuels.** See also *Firing,* and cross-references.
aërodynamics as basis of fuel technology, A (4) 153.
bituminous coal gas for firing porcelain circular furnaces, A (8) 287.
calorific values of, sources of error in determinations, A (6) 228.
for cement manufacture, efficiency and review, B (10) 337.
coal, Ala.: classification and analyses, A (6) 227; friability, B (7) 260; grindability, B (7) 260.
analyses and pulverizing characteristics, B (4) 154.
ash-softening temperature and ash composition in, A (4) 153.
Baum-type and pulsator-type coal-washing jigs, B (6) 229.
bituminous, low-temperature carbonization, A (1) 33.
in Britain: British, distribution and properties, A (9) 312; in North Staffordshire, B (1) 34; preparation for market in England, B (3) 114; survey in England, B (3) 114; in Scotland, geology, B (7) 263.
Bur. Mines bibliography, 1910–1935, B (1) 34; Bur. Mines studies in 1936, B (3) 114.
calorific value of, effect of storage, A (6) 228.
in Canada, for ceramic uses, A (1) 32.
chemical nature, A (1) 34.
and coke, chemical treatment, B (2) 81.
and coke, sampling and analysis, Brit. Stand. Specif., B (1) 34.
dewatering and drying, B (10) 337.
friability and size stability tests, A (4) 154.
gas occurrence in, A (6) 228.
for glass-furnace heating, properties, A (9) 312.
grindability methods, A (11) 362; effect on pulverizer performance, A (4) 154.
hydrogen-carbon ratio and volatile matter, relation, A (10) 337.
hydrogenated, Bur. Mines experimental plant, A (5) 195; determination of sulfur in insoluble residues, A (10) 336.
hydrogenation studies, A (1) 34, B (3) 114, A (5) 195.
Ill., classification and selection by A.S.T.M., B (2) 90.
Kan. and Mo., classification and analyses, A (6) 228.
laboratory tests on, proximate analysis and calorific value, A (4) 154.
Lurgi process for gasification with oxygen under pressure, A (4) 154.
mineral constituents, removal, A (11) 362.
plastic range in coking, A (10) 337.
primary liquefaction by hydrogenation, A (1) 34, A (5) 195.
pulverized, steam-generating unit, design, A (6) 236.
research and technologic work on coal, 1937 Rept., B (6) 229.
**Fuels,** coal (*continued*)
separation apparatus, P (2) 79.
spontaneous heating of, prevention, A (6) 228.
standards for classification by rank and grade, A (8) 287.
sulfur in, effect, A (4) 154.
thin section preparation for tests, B (11) 362.
variables in sampling, A (11) 362.
W. Va., classification and analyses, A (7) 260.
coal dust, refractories for boilers and chambers for, A (7) 255.
coal industry, effect of large-scale hydroelectric program, A (7) 266.
colloidal, history and development, A (10) 336.
for Diesel engine, efficiency ratings, A (5) 192–93.
fuel oils, definitions and data, A (1) 33.
Fuel Research Board Rept., 1936, B (3) 114.
gas, by-product coke-oven, electrostatic separation of, A (1) 28.
calculations for industrial furnaces, A (8) 287.
for ceramic firing, A (1) 33.
industrial, electrical production, A (10) 336.
liquefied petroleum, for ceramic firing, A (11) 362.
natural: in Europe, sources, A (5) 195; for firing shale paving brick, A (3) 113; precision analysis, A (5) 201.
Orsat and Pyrex apparatus for analysis, A (5) 201.
producer *vs.* town, heat value, A (3) 113.
propane, for glass plants, A (5) 195.
purification, P (6) 229.
town, combustion principles, A (2) 80.
water gas with city gas, production in coke ovens with externally heated vertical chambers, P (8) 287.
hydrocarbon systems, phase equilibria in, XIX–XX, A (5) 195–96.
oil, and burners for, data, B (3) 113, B (3) 114.
calorific values of, A (6) 228.
cracking process and heaters for, A (6) 221.
detailed studies, B (3) 113–14.
for glass furnaces, A (2) 64.
raw, fuel, and coal-tar, for glass furnaces, A (2) 65.
petroleum and natural gas, Bur. Mines Petroleum Expt. Sta., A (10) 337.
producer-gas, control of composition, P (9) 312.
pulverized, automatic system for supplying to furnaces, P (3) 112.
solid, and gases: automatic moisture determination, A (1) 41; combustion temperature, A (6) 227.
solid stable, manufacture, P (10) 337.
in U. S., energy data, A (7) 259.
**Fumes.** See also *Dusts; Smoke.*
in acid pickling process, removal process, A (11) 349.
and dust, industrial diseases caused by, A (5) 203.
sonic flocculator as fume settler, B (11) 365.
**Furnaces.** See also *Burners; Carbonization; Firing; Fuels; Kilns; Ovens; Refractories for furnaces; Retorts; Stokers; Tanks.*
air-jacketed heat treatment and forging type, A (6) 220.
annealing. See also *Annealing.*
annealing: circular, for parabolic glass mirrors, P (5) 182; mechanical insertion of glass in, P (10) 328.
annealing atmosphere type for bathtubs, A (6) 212.
annealing chamber, cooling data, A (3) 99.
arc, effect of thermal insulation on current consumption in, A (5) 195.
atmospheric, for annealing bathtubs, A (6) 212, A (7) 245.
automatic control of, increase of metallic yield, A (10) 336.
blast-. See also *Refractories for furnaces, blast-.*
bottoms of cast Fe blocks with chromite lining, A (6) 220–21.
for fusing bauxites, A (2) 70–71.
and open hearths, fuel economies by thermal insulation, A (11) 353.
refractories for, A (6) 222.
boiler. See also *Boilers; Refractories for boilers; Refractories for furnaces.*
combustion-chamber air inlet nozzles, A (11) 361.
heat losses in, A (6) 236.
slag action from fuel in, A (4) 142.
**Furnaces,** boiler (*continued*)
temperature conditions in, A (4) 145.
and boilers, automatic combustion control, A (1) 46.
box-type, with air circulation, A (2) 56.
brick for, P (1) 34.
for carbon and sulfur determination by ignition, A (9) 310.
continuous, "U" type, A (8) 271; continuous cryptol, for refractoriness tests, A (2) 70; see also *Furnaces, enamel.*
controlled atmosphere in, developments, A (11) 362.
controlled atmosphere type, A (4) 154.
for convection heating, types of equipment for, A (2) 70.
conveyers for, A (7) 245.
crucible, induction, and basic arc, for tool and alloy steel production, raw materials for, A (11) 360.
crucible melting, operating data, A (11) 354.
cryptol laboratory, A (1) 31.
designs in, review, A (3) 113.
double end-fired naphtha and gasoline reforming furnace, A (10) 330.
draft controller for, A (1) 28.
electric. See also *Firing; Furnaces for glass production, electric; Kilns, electric.*
for abrasive metal carbides, P (9) 296.
for automatic combustion in micro-elementary analysis, A (8) 284.
for bright annealing, A (6) 212.
with ceramic Silit resistance, A (3) 80.
construction, P (9) 311–12; design for, A (1) 28; home-made type, A (4) 150.
continuous, for firing ceramic ware, P (2) 81.
for controlled atmospheres, A (10) 333; electric *vs.* fuel-fired for, A (11) 362.
efficiency data, A (1) 32–33.
for firing ceramic tile, A (7) 260.
for glass, ceramics, and enamel, new installations *vs.* old, A (11) 362.
for glass industry in Czechoslovakia, A (6) 215.
high-temperature muffle, A (1) 28.
industrial, temperature regulation, A (2) 79.
and other apparatus for firing ceramic ware, P (1) 35.
patent designs, P (6) 227, P (10) 337.
Riposta, for firing decorations on porcelain and glass, A (3) 112.
rotary, for glassmelting, P (6) 217–18.
small size for glass industry, A (4) 139.
smelting, cover for, P (7) 259.
electric arc and electric tunnel, in Germany, symposium, A (11) 362.
electric fusion, P (3) 112.
electric muffle, for hardening steel, in Germany, A (2) 78.
electric resistance: advantages, A (5) 195; survey, A (5) 196.
electric tunnel, P (2) 81.
electron, for temperatures to 4500°F, A (6) 225.
enamel, electric: advantages, A (1) 7; high-capacity type, A (11) 362.
English types, A (9) 299; "U" type, A (8) 271.
gas radiant-tube type, operating data, problems, and fuel costs, A (1) 7, A (1) 9, A (2) 58, A (4) 134–35.
heating furnace economy and operations, A (1) 8.
operating results, A (1) 9.
patent design, P (2) 59.
radiant-tube firing, A (11) 348.
revolving type, thermal efficiency, A (5) 175.
semicontinuous, for large sheets, A (1) 9, A (2) 57.
firebridges of, solid fuel for, P (6) 223.
firing method, P (5) 194.
frit and muffle, methods of heat recovery, A (4) 135.
for glass production. See also *Furnaces, electric; Leers; Pots, glass; Refractories for glassmelting; Tanks, glassmelting.*
chemistry of construction: slagging process above melt, I, A (5) 176–77; influence of surface tension of slag glass from refractory material on tendency to form nodes and cords, II, A (5) 177.
coal heating data, A (9) 312.
construction of basin bottom, P (7) 250.
control of temperature and glass in forehearth, P (1) 16.
cooling furnace, P (2) 67.
device for skimming glass in forehearth P (1) 16.
electric, automatic type, A (2) 61.

**Furnaces,** for glass production (*continued*)
electric: for melting glass, P (10) 327; for tempering sheet glass, P (8) 277.
electric induction type, P (2) 67.
electric rotary type, P (6) 217; small electric type, A (4) 139.
flow of glass in tanks, A (8) 273.
Fourcault tanks, comparison, A (7) 247.
for fusing glass, P (3) 102; and refining glass, P (6) 218; for silicate glass, P (8) 277.
with gathering basins, P (8) 277.
glass tanks, glass currents in, A (8) 274.
hearth-type, heat losses through walls, A (4) 138.
homogenizing process, A (5) 179.
multipot, for selenium ruby glass, A (11) 351.
oil firing, A (2) 64.
paddles for operating in forehearths, P (7) 251.
patent designs, P (1) 16, P (2) 67, P (4) 140, P (5) 182, P (5) 183, P (7) 250, P (8) 277, A (9) 303.
polariscope type for strain tests, A (11) 350.
rapidly rotating: charging process, P (10) 327; drawing molten glass from, P (10) 327.
raw oil, fuel oil, and coal-tar oil firing, A (2) 65.
with recirculation of molten mass by vacuum, P (8) 277.
refractory cement composition, P (5) 190; refractory materials for, A (3) 103; types and properties of refractories for, review, A (11) 354.
repairs for, P (8) 278.
for rosaline glass production, A (5) 179.
standard basis for tank performances, A (8) 275.
temperature measurements, I, B (3) 101.
for tubes or rods, P (2) 67.
ultramarine formations on checker brick in, A (7) 247.
for use with glass-producing machines, P (9) 305.
glass tanks, book for factory man, B (1) 15.
glass tanks, device for conditioning glass, P (1) 17; suction device for withdrawing molten glass, P (1) 17.
glass trough, fireproof blocks for, P (11) 357–58.
glass-walled chambers in, for continuous tests on fibrous and fine-grained materials, A (7) 257.
heat absorption calculations on irradiated cooled surfaces, A (3) 103.
heat control for enamel industry, A (6) 213.
heat losses in, calculation, A (11) 362.
heat losses in hearth-type glass furnace, A (4) 138.
heat losses from, and heating installations in intermittent operation, A (9) 312.
heat-transmission value and heat capacity, A (6) 228.
heating, means for, P (9) 312.
hydraulic *vs.* energetic theory, A (6) 228.
industrial, gas combustion data, A (1) 33.
industrial: heat-resisting steels in, A (8) 284; protective coats for muffles and walls in, A (2) 81.
industrial, special atmospheres for, data, A (9) 312.
insulation in, for fuel saving, A (1) 46.
laboratory, cryptol type, A (1) 31.
Liptak, construction, A (6) 220.
low-frequency induction, linings in, A (11) 354.
Martin, siemensite for, A (5) 188–89.
for mineral wool production, P (10) 328.
monolithic, construction, A (7) 253.
muffle, patent designs, P (2) 81, P (8) 287.
muffles, controlled atmosphere damage in, A (8) 287.
open-hearth, basic processes, I–IV, A (10) 329.
open-hearth, insulating panel, A (10) 330.
periodic, heat insulation, A (9) 312.
porcelain circular, firing with bituminous coal gas, A (8) 287.
radiant-tube, propane-heated, for annealing sheet steels, A (6) 212.
reversible regenerative type, P (7) 261.
revolving, thermal efficiency, A (5) 175.
revolving tube, melting of glass or refractory minerals, P (8) 286.
rotary, kiln, or drier, patent design, P (10) 336.
shaft, for firing dolomite, A (1) 18.
short-cycle, malleableizing, for heat-resisting alloys, A (11) 360.
slag and flux compositions and ingot practice, A (11) 360.

**Furnaces** (*continued*)
small atmospheric, for high melting temperatures, A (1) 30.
smelter linings, soapstone and chrome refractories for, A (10) 331.
steelmelting and reheating, fuel economy in, A (1) 33.
with surface combustion principles for operation, A (2) 72.
temperature controlled, P (2) 81.
tube, for melting glass, silicates, and other refractory materials, rapid heating of, P (6) 227.
tunnel: for ceramic products, P (5) 196, P (10) 337; electrically heated, P (2) 81.
**Fused mullite.** See *Mullite.*
**Fused quartz,** holes in, production, P (7) 251.
**Fused rock,** valuation of raw materials for (U.S.S.R.), A (1) 15.
**Fused salts** and glasses, surface properties of, I–II, A (7) 249; viscosity and electrical conductivity studies, A (10) 327.
sessile-drop method for surface tension and density measurements of viscous liquids at high temperatures, I, A (7) 249.
**Fusion,** liquid state and theory: continuity between solid and liquid states, I; theory of fusion and crystallization, II, A (3) 119.
theory, and Virial theorem, A (2) 87.

**Gadolinium,** X-ray spectrographic determination in presence of other rare earths, A (7) 264.
**Ganister,** Scotch deposits, A (6) 230.
**Garner, Walter,** color theory, A (2) 53.
**Gas (gases).** See also *Fuels, gas; Gas apparatus.*
analysis of, Haldane gas apparatus, B (11) 361.
behavior in theory and practice, B (6) 227.
butane-pentane mixtures, compressibility below one atmosphere, A (8) 287.
in ceramic bodies, degassing and de-airing of, P (5) 194.
chimney, dust removal, A (5) 195.
in clays, degasifying in extrusion presses, P (6) 227.
in coal, possible modes of occurrence, A (6) 228.
combustion: in industrial furnaces, A (1) 33; sulfur removal, A (3) 113, A (5) 200.
for controlled atmospheres, purification process, A (11) 362.
dust in, baffle apparatus for separation, P (6) 227.
dust collection from, in cement kilns, P (1) 31.
effect on course of reaction between zinc oxide and chromic oxide, A (5) 200.
electrolytic introduction into glass diaphragm, data, A (2) 61.
flowing, dust separation from, apparatus, P (8) 286.
flue: electropurification, A (1) 30; separators for, A (6) 228; thermal-conductivity method for analysis, A (4) 153; treatment, P (10) 338.
gas analyzing apparatus, P (10) 336.
gas-liquid equilibria for system methane–butane, A (10) 336.
from glass, evolution of, effect of high-frequency discharge, A (2) 62.
in glass bubbles, change in Ensz method for analysis, A (2) 60.
high-vacuum gas-analysis apparatus, A (10) 334.
hydrocarbon, effect on refractory materials, IV–V, A (2) 71; I, A (8) 280.
hydrocarbon, production from coal, P (8) 287.
industrial and waste, Lurgi processes for use of, A (8) 287.
industrial propane as glass plant fuel, A (5) 195.
liquefied petroleum, for ceramic firing, (11) 362.
methane and *n*-butane, equilibria constants for, A (10) 336.
microanalysis of, apparatus, A (8) 283.
mine, protection against, B (1) 47.
moisture content, dew-point potentiometer for, A (4) 149–50.
permeability of cellulose membranes to, XIX (*d*), A (9) 315.
permeability in porous bodies, test apparatus, A (2) 77.
portable apparatus for analysis, A (9) 310.
protective, for bright annealing of iron, steel, and nonferrous metals, A (10) 325.
purification by I. G. Alkazid process, A (9) 316.
and solid fuels, automatic moisture determination, A (1) 41.

**Gas** (*continued*)
solid particles in, cyclone apparatus for separation, P (5) 194.
specific heat at high temperatures, sound-velocity method for: carbon dioxide, II, A (7) 259; carbon monoxide, I, A (8) 287.
sulfur dioxide in: extraction, P (11) 363; recovery, P (8) 294.
town gas, formation of nitrogen oxide during combustion, A (8) 287.
**Gas apparatus.** See also *Gas (gases).*
for automatic analysis with different measuring ranges, P (11) 367.
burners, P (7) 261; flame velocity in, A (3) 113; simple high-temperature type, A (2) 79.
gas burners and systems, classification, A (6) 227; types and manufacturers, A (7) 259; calculations for gas consumption, A (8) 287.
gas generators, wood as fuel, A (3) 113.
gas immersion heaters for pickle room, A (8) 271, A (10) 324.
gas producer principles for kiln firemouths, advantages, A (8) 286–87.
gas producers, design and operation, A (2) 81.
generators with revolving grate, operating data, A (8) 287.
heat calculations for industrial furnaces, A (8) 287.
Orsat apparatus, modified, for gas analysis, A (2) 78.
retorts, refractories for, A (4) 144; see also *Retorts.*
Siemens inclined grate, Morgan, Heurley, Stein, and Sauvageot producers, A (2) 81.
**Gehlhoff and Thomas** cited on effect of various glass-forming oxides in glass, A (4) 140.
**Gels,** $Al_2O_3$ and $SiO_2$, synthesis experiments, A (1) 36.
clay, structure, A (3) 116–17.
and clay suspensions, colloidal properties, A (4) 156, A (6) 229–30, A (11) 365.
review of studies, A (4) 162.
silica: adsorption of lime on, A (3) 118; distribution of solutes in, A (7) 264.
**Gems,** precious stones, examination, A (1) 46.
**Geochemistry** *vs.* silicosis, application to problems of, A (2) 88.
**Geology,** apparatus and method of boring into and treating earth materials, P (10) 341.
of British pottery materials, A (7) 261.
cartography for refractories raw materials, A (9) 313.
of central coal field, Scotland, B (7) 263.
in China, A (3) 123.
clay constitution, Ekblaw and Grim theories, A (11) 363.
the Earth's interior, nature and composition, A (10) 339.
economic, B (8) 290.
geological explorations, method, P (8) 290.
geological structures, geophysical method for determination, P (8) 290.
of glacial sand and gravel deposits, A (9) 313.
of Great Britain, 1936 summary, I, B (2) 83.
history in India, B (10) 341.
Mich. Centennial Map of, B (4) 159.
mining and engineering, of Cornwall, literature from 1542 to 1936, A (8) 288.
of nonmetallics of southeast, A (10) 339.
in North America, bibliography, 1935–1936, B (5) 198–99.
of northern Ontario, A (10) 339.
of Wigan District, B (11) 364.
**Germany,** abrasive industry in, handbook, B (1) 3; glass factories in, history, I, A (6) 216; II, A (7) 248.
**Gibbsite bauxite,** studies, A (10) 339.
**"Gitempite,"** refractory cement, A (6) 221.
**Glass.** See also *Architecture; Art and artware; Furnaces for glass production; Glass apparatus; Structural materials, glass.*
adsorbed water film on, thickness of, Thomson formula for, A (2) 84.
Afga-Infrarot-810 plates for infra-red measurements, A (8) 272–73.
and alkali ions in lead chloride melts, measurement of phase-boundary forces in, A (11) 350.
alkali-lime-magnesia-alumina-boric oxide-silica mixtures, studies, A (4) 138.
alkali metals on, thin films, electrical conductivity of, A (8) 273.
alloys for, special types, A (9) 304.
alumina as coating for telescope mirrors, A (11) 351.

**Glass** (*continued*)
alumina in, effect, A (1) 12; in $6SiO_2 + Na_2CO_3 + CaCO_3$ mixtures, effect, A (9) 302.
alumina-silica relation in, A (7) 246.
aluminum adherence of, technical applications, A (9) 301.
aluminum deposits on, for heating elements, A (1) 15, A (4) 137.
aluminum sprayed on, Schoop method, A (4) 137.
American: developments in 1931–38, II, A (10) 326; literature review since 1915, A (8) 272.
American, early types: Amelung, A (2) 53; Sandwich and South Jersey types, A (9) 296; Stiegel and Ohio glass, A (5) 171; wineglasses, A (2) 53.
ampoules. See *Glass, chemical.*
ancient. See also *Archeology; Art and artware.*
ancient, rare, Buckley's Collection, A (2) 54.
ancient, Roman, from Karanis, B (2) 54.
ancient, spectrographic studies: Chinese, elements in, A (4) 139; Egyptian, 18th dynasty, cobalt content, A (7) 249.
annealed, low-expansion, P (4) 140.
annealing, law of quantitative treatment and molecular interpretation, A (4) 138.
annealing, method and apparatus, P (9) 306; stabilizing method, P (5) 183.
annealing, and physical properties of cold glass, III, B (3) 101.
annual report, A (7) 246.
for architecture. See also *Architecture; Structural materials, glass.*
for architecture and decoration, B (9) 305; use, I, A (9) 303.
for architecture in England and France, A (8) 272.
in architecture, Pittsburgh Glass Inst. contest, A (8) 269.
arsenic in, determination, VIII, A (2) 64; reactions, A (2) 65.
arsenic-free, for Kjeldahl flasks, A (2) 64.
arsenious oxide as opacifier, A (5) 176.
art of glassmaking, B (9) 305; artists and designers for, A (2) 60, A (8) 269; artwork of technical group, A (5) 171; see also *Art and artware, glass.*
Babinet compensator for stress measurements on glass rods, III, A (9) 305.
baryta crown, heavy, chemical resistance, A (2) 61.
batches for, P (8) 277; materials for, A (2) 60; method for blending and proportioning, P (3) 112.
clear transparent glass, preparation, P (7) 250.
cullet content in, A (1) 13.
melting of, methods, A (1) 12.
and moisture of, effect on melting and working properties, A (2) 61.
sintering of, P (7) 251.
bent, nonreflecting type, use, A (3) 99–100.
beryllium in, effect, A (3) 115–16.
beryllium oxide in, A (2) 60.
binary and ternary systems related to fundamentals of, A (5) 176.
binder for mineral wool fibers, P (10) 327.
binding materials for assembling glass panels, A (8) 272.
blast-furnace slag for, A (6) 214.
blast lamp for working of, as cause of defects in, A (8) 273.
bloom in. See *Glass, defects in.*
blow-lamp flame treatment of, behavior, A (1) 10.
Bohemian, decorative methods, A (8) 274; Bohemian modern pieces, A (7) 242, A (9) 296.
borates in, composition and melting process, A (1) 13.
borax in, dehydrated and hydrated, effect on melting velocity, A (6) 214.
boric acid in: analysis, A (2) 66, A (4) 137; detection of small quantities, A (2) 60.
boric anhydride, tempering and reheating of: dilatometric tests, A (4) 137; volume measurements, A (5) 181.
boric anhydride in, volatilization of, A (5) 181.
boric oxide in: effect, A (5) 178; surface-tension measurements, A (8) 275.
"boring hardness" tests, A (8) 274.
boron anhydride, dilatometric tests on tempering and annealing of, A (4) 137.
borosilicate: composition, P (2) 67; treatment, P (4) 141.
borosilicate, resistant to alkaline liquids, P (4) 140.
borosilicate, scoring or cutting of, A (7) 248.
borosilicate rods, thermal endurance tests, A (9) 305.
bottles, bursting pressure test, A (9) 301.
effect of color on setting rates, A (11) 350.
nonrefillable; nonrefillable stopper, P (10) 328.
production, P (1) 16.
tests on breaks from slow loading, A (2) 65.
yellow-green, from blast-furnace slag, A (8) 276.
breaking strength of. See *Glass, strength of; Glass, thermal durability.*
brick. See *Structural materials, glass.*
British development, 1916–1937, scientific and heat-resisting types, IV, A (9) 303.
bubble-pressure method for surface-tension measurements, A (9) 302.
bubbles in. See *Glass, defects in.*
for building uses. See *Structural materials, glass.*
$CaO–Na_2O–SiO_2$, specific gravity at high temperatures, A (5) 181.
carbon in, Nicloux method for determination, A (1) 42.
cast molten, for hollow-ware, P (8) 277.
cellular, process, P (11) 352.
and ceramic bodies, impact strength of, relation to thermal shock resistance, A (11) 354.
charcoal for multicellular product, P (5) 183.
chart for design progress and examination of color-temperature altering filters, A (2) 60.
chemical, and chemical apparatus. See also *Glass, bottles; Glass, laboratory; Glass, medicine bottles.*
all-glass apparatus for density measurements by flotation, A (4) 148.
ampoules, stricture in, P (10) 328; wide bodies and tubular necks, production, P (10) 328.
double-walled, method, P (2) 68.
effect of chemical composition and heat treatment on water solubility of, A (4) 136–37.
flask stopper for reagent bottles, P (10) 327.
Kavalier "35" and Kavalier "Isis," tests, A (2) 66.
pharmaceutical, production, A (5) 178.
Pyrex-brand drier tube, A (2) 64–65; Pyrex-brand properties, A (2) 63.
quartz or refractory-glass vessels, vacuum-tight seals for current leads into, P (2) 68.
chemical composition (constitution), atomic study, A (10) 325.
chemical compounds in, properties, A (5) 176.
structure of: and infra-red spectrum, A (4) 138; *vs.* optical constants of three-component types, IV–V, A (3) 100; phosphorescent type, A (2) 65–66; studies, A (1) 14.
and water solubility, V, A (4) 136–37.
window-glass type, A (1) 11.
work of W. Weyl, A (2) 66.
X-ray analysis for structure studies, A (10) 327.
chemical durability (chemical resistance). See also *Glass, strength of; Glass, thermal durability.*
of baryta crown, effect of $Al_2O_3$, A (2) 61.
of bottles, standard test for, A (4) 137.
and electrical resistivity tests, constant temperature and humidity chamber for, A (9) 302.
of Jena glass, A (10) 13.
laboratory test methods, A (1) 14.
method of radioactive indicators, IV, A (2) 60.
Mylius boiling method and Weber and Sauer method for glass resistance to acid and alkaline solutions, A (6) 214.
$Na_2O–CaO–MgO$ glasses, A (2) 60.
chemical physics of, A (5) 176.
chemical research in, V; duties of chemist, XIX, A (10) 326.
chemistry of, I, B (3) 101.
chilling baths for tempering, P (4) 140.
"chilling" strength. See *Glass, thermal durability.*
"China glass" in India, A (5) 176.
for clocks, edge-grinding machine for, A (8) 272.
cloth wall paper, A (3) 99.
coated, production, P (8) 277; coating sheets with polymerized vinyl compounds, P (4) 140.
cobalt content in ancient Egyptian glass, A (7) 249.
colored, Aerograph machine for color-spraying, A (11) 350.
analysis of, determination of copper, I, A (1) 10.
black, from peat slag, A (1) 10–11.
blast-furnace slags for, A (6) 214.
color changeability and effect of rare earths on ultra-violet light absorption of, A (11) 350.
copper-ruby, II, A (5) 181; studies on, A (5) 178.
or decorative, production, P (4) 140.
fired-in colors, in lamp manufacture, A (6) 215.
gold-ruby, history, I–II, A (5) 179; III, A (6) 215–16.
kinetics of, X-rays, A (1) 12.
manufacture, P (7) 249.
opaque, for dental use, P (5) 182.
process for glass plates, P (7) 250; for vitreous article, P (8) 279.
rare earths for, A (8) 274.
rosaline, production, A (5) 179.
ruby, composition, P (5) 183–84.
Schott GG–3 type for filtering light, A (6) 216.
selenium pink, rare earths for modification, A (5) 172.
selenium ruby, production in multipot furnaces, A (11) 351.
silver-stained, measurement, III, A (1) 11.
spraying with vitreous coating, P (8) 277.
variegated sheets, production, P (6) 219.
yellow, production, A (5) 177; yellow-orange, sulfurous matter for, V–VI, A (5) 178.
colorimetric method for tints and intensity tests of silver-stained types, A (1) 11.
colorless, composition, P (9) 301; colorless transparent container glass, batch for, P (6) 218.
commercial, composition and properties, A (7) 247.
commercial, crystalline products in, microscopical identification of, A (9) 304.
commercial, soda-lime-silica, comparison of test methods for analysis, A (1) 11.
commercial, for special filters, characteristics of, A (2) 65.
in commercial Portland cement clinkers, approximate content of, A (4) 131.
components of, as functions of temperature, A (8) 272.
compound, production, P (8) 278; joining of layers, P (11) 352; and other laminated materials, production, P (4) 141.
constitution of. See *Glass, chemical composition; Glass, chemical durability.*
construction of direct daylight factor diagrams with allowance for transmission losses in, A (4) 137.
container (Owens-Illinois Glass Co.), P (5) 182.
contamination by grease, A (4) 137.
copper in, determination, I, A (1) 10.
corrugated sheets, P (1) 15; method and apparatus for, P (9) 306.
crushing and sieving of, for grain surface control, A (1) 11.
crystal flash, colored, patterned hollow glassware from, P (11) 352.
crystalline inclusions in, microscopical identification, A (9) 304.
crystallization test, luminescence test for, A (7) 248.
cullet in, variation in quantity of, A (1) 13.
curved, invisible window type, A (6) 216.
decoloration of, control instrument for, A (1) 12.
decolorization process, A (8) 273.
decolorizing of, factors in, A (1) 11; review, A (1) 11; with selenium, A (8) 276.
decomposition of, time law of, A (2) 66.
decorated (decoration of). See also *Decoration; Glass, etching of; Glass, patent designs for.*
aluminum deposits on, A (1) 15; Schoop method, A (4) 137.
in Czechoslovakia, B (7) 244.
designs, patterns, or ornamental effects on molded ware, P (7) 251.
18th Century technique, II, A (6) 215.
by engraving, etching, sandblasting, A (1) 13; development of polishing, engraving, sandblasting, etching, etc., A (8) 269.
etching process, P (1) 15, P (11) 352; etching or frosting solutions for, A (6) 215; frosted, method, P (5) 182, P (6) 218.
in Europe and America, history, B (5) 181.

**Glass,** decorated (*continued*)
and form of: for industrial use, A (2) 62; from viewpoint of hand or industrial production, A (5) 171.
German Comm, on, A (2) 63.
gold fusion on, A (4) 134.
gold paints for, A (4) 130.
handbook of glass painting, B (8) 276.
luminescent colors for, P (10) 323.
noble metals coating for, atom thick, A (4) 138.
printing process, A (6) 210.
process for glass, ceramics, enameled iron, P (6) 211.
relation between design and form, A (7) 242.
sandblast decoration for plastic relief, P (3) 102; sandblasting for internal patterns on hollow glass, P (11) 352.
silk-screen process, II; photographic principles in, III; miscellaneous decorating methods, IV, A (4) 129.
spray booth for, P (7) 251.
table decorating unit, P (7) 251.
treatment for laminated structures, P (7) 250.
variegated glass sheets, production, P (5) 183.
defects in, blackening or clouding, A (1) 10.
from blast lamp, A (8) 273.
blistery types, classification, A (7) 246–47.
bloom, causes, A (3) 101.
breaks resulting from slow loading, A (2) 65; behavior of breaks in flat glass, A (8) 272.
chemical corrosion, A (1) 13.
classification according to origin, A (7) 246–47.
cords, inhomogeneities, and surface unevenness, apparatus for, A (9) 301.
cracks from lithium nitrate in etching process, A (5) 178.
discoloration from exposure to phosphorus compounds, A (5) 180; discoloration of luminous types, A (2) 66.
Ensz method, change in, for analysis of gases occluded in bubbles, A (2) 60.
flaws and scratches, effect on breaking strength, A (1) 11.
Fourcault types, removal, A (2) 63, A (4) 137.
glass gall, formation, A (1) 12.
during glassworking, A (1) 11.
grained surfaces in pressed ware, A (6) 215.
from grease and oil, A (4) 137.
"halo," foam, and bubble formations, A (1) 10.
nephelite "worms," cause and prevention, A (5) 179–80.
optical types, striae, causes of, A (9) 303.
Osram process for streaks, A (5) 189.
strain measurement by spatial observations of polarized light, A (5) 177.
strains, cause and effect of, A (4) 136; see also *Glass, strains in.*
technical snapshots of, A (5) 181.
technology of, A (3) 99.
degasifying and fusing of, P (8) 277.
density of, flotation measurements with all-glass apparatus, A (4) 148.
for dental plates, P (5) 182; for dental use, false teeth, A (1) 12.
designs for. See *Glass, decorated; Glass, patent designs for.*
"Dethermalglas" sunlight and electric arc types, A (8) 274.
devitrification of quartz types, effect of raw materials on, A (5) 177–78.
diaphragm, electric transport through phase boundaries, A (2) 61–62.
dielectric constant and dipole losses at high frequencies, A (10) 326.
dielectric losses in inorganic types at radio frequencies, A (4) 137.
dielectric materials, insulating properties of, A (2) 65.
dilatometer, photographically registering type of Leitz Co., A (6) 215.
dissolving action on tank brick at glass surface, A (2) 60, A (4) 136.
dolomite in, effect, A (2) 60, A (3) 122; dolomite and magnesia in place of calcium oxide in, A (5) 179.
double glazing of, P (1) 15.
"ductility" of, definition, A (4) 137–38.
ductility and parison distribution of, A (4) 137–38; ductility and penetration factor of, A (5) 181.
durability. See *Glass, chemical durability.*
Duran, chemical composition, A (7) 249.
Egyptian glass, "nummi vitrei," use, A (8) 269.

**Glass** (*continued*)
elastic after-effect *vs.* optical after-effect, A (10) 326.
elastic constants of optical types, determination of, A (5) 177.
elastico-viscous properties near "transformation point" temperatures, A (8) 273, A (9) 303.
electric arc for analyses, A (6) 217.
for electrical discharge devices, composition for, P (1) 15.
electrical properties of lighting types, V, A (9) 303.
electrodes. See *Electrodes, glass.*
English, Bristol ware, A (9) 297; English design, history of 100 years, A (8) 269.
Ergon, chemical composition, A (7) 249.
etching of. See also *Glass, decorated.*
and embossing, principles and methods, A (9) 297.
or frosting solutions for, A (6) 215.
hydrofluoric acid for, A (3) 99.
lithium nitrate for, A (5) 178.
Euphos, composition, A (5) 178.
European novelties in, A (6) 215.
evolution of progress, A (7) 249.
extraction of, time law of, A (2) 66.
feldspar in, effect, A (1) 12; tests, B (4) 140.
fiber. See also *Glass, silk; Glass, spun; Glass, wool; Insulating materials, glass.*
for bonding agent in asphalt road, P (7) 250.
composition and production, P (8) 277; process, P (10) 328; properties, A (5) 180.
by extrusion through fine orifices, P (14) 352.
felted fibrous products, production, P (9) 305.
for filtering gas, A (9) 303.
flexible glass tape for electrical insulation, A (9) 303–304.
for insulating tapes, A (11) 350.
for insulation, A (5) 178; insulation properties, A (9) 304.
as insulator for electric apparatus, A (8) 273, A (9) 303–304.
manufacture and production, A (1) 12, P (3) 101, P (5) 182, P (6) 218, A (7) 247.
method of drawing from viscous substance, P (2) 68.
mineral wool, binders for, P (10) 327.
packing, P (10) 328.
siliceous, forming of, P (6) 218; method and apparatus for, P (6) 219.
spinning and weaving of, process, A (10) 327.
spun glass, properties and uses, A (9) 304–305.
tensionless, forming of, P (8) 276.
textile fabrics, preparation and use, A (5) 180.
textile fiber (alkali-free), for electric insulation, A (8) 273.
textile processes, A (5) 181; review, A (9) 303.
threads: processes, P (10) 328; treatment, P (10) 328; and wool, centrifugal process, P (10) 328.
fiber-weight method for surface-tension measurements, A (9) 304.
filament incandescents and nonfilament-tube lamps, types, A (6) 216.
filling tubes of vessels with high pressure, sealing off, P (6) 219.
films on, electrical conductivity of alkali metal films, A (8) 273.
filters, air filters, A (1) 12.
filters, color-temperature altering types, selection of, A (2) 65.
flasks, dropping, method for, P (8) 278.
flat, surface working of, by grinding, I, A (1) 14, A (8) 275.
flow characteristics of, comment on Barrett and Taylor method, A (7) 247.
fluorescence of: studies, A (7) 247; tests, A (7) 248; for structure examinations, A (9) 302.
fluorescence or phosphorescence of optical types, A (2) 66.
fluorescence and phosphorescence studies, A (10) 326.
fluorescence indicator in, Na uranate for, A (6) 214.
fluorescent, composition, P (6) 218.
fluorescent opal bulb for luminous discharge lamps, P (2) 67.
foam type, development, A (6) 214–15; production, P (11) 352.
Foma-Panchro-Isolar plates for ultraviolet and visible spectrum measurements, A (8) 272–73.

**Glass** (*continued*)
Ford process of manufacture, I–III, A (6) 216.
formula for index of refraction measurements, III, A (9) 301–302.
Fourcault, for copper-ruby type, production, A (5) 178.
Fourcault, defects in, and removal of, A (2) 63, A (4) 137.
Fourier analysis of soda-silica glass, X-ray patterns of, A (8) 273.
fracture of, percussion method, A (7) 247.
fragility and brittleness of, "Vorspannungs" method for tests, A (6) 214–15.
frosted. See *Glass, decorated.*
fused, for colored on modified glass, P (8) 276.
fused, and slags, modified Frank viscometer for tests, A (5) 194.
and fused salts, viscosity and electrical conductivity studies, A (10) 327.
fused silica. See *Silica, fused.*
fusing and degasifying of, P (8) 277.
fusion with ceramic bodies, P (2) 67.
gas adsorption by glass walls, $CO_2$ and Jena glass, XIV, A (2) 59.
gas evolution from, under influence of high-frequency discharge, A (2) 62.
Geräte 20, chemical composition, A (7) 249.
German-Bohemian, early history, A (6) 215.
German State Technical School for Glass Industry, work of, A (8) 273, A (9) 297.
in Germany, artistic tasks in glass industry, A (2) 60; decoration, A (8) 269; history, I, A (6) 216; II, A (7) 248.
glass gall, formation of, A (1) 12.
glass-gas or vapor, electric transport through phase boundaries, studies, A (2) 61–62.
glass-to-glass bond, method, P (3) 102.
glass joint, sliding ground-glass type, A (3) 100.
glassmelting, secondary glassforming materials in, A (1) 14.
glass-to-metal: cements for metallic parts, A (8) 274; for coated ware, P (8) 277; sealing ceramic materials to, A (11) 350; uniting quartz and metal pieces, P (5) 183, P (7) 251.
glass-to-metal adherence, aluminum deposits for heating elements, A (1) 15; Schoop spray method, A (4) 137; technical applications, A (9) 301.
glass-to-metal annealing, process, P (5) 183.
glass-to-metal joints, studies, A (3) 99, P (3) 102.
glass-to-metal process, joining quartz articles to surfaces of metal, glass, or ceramic materials, P (5) 183.
glass-to-metal seals, P (1) 16, P (2) 68, P (4) 140; apparatus for, P (2) 67, P (9) 305; forming process, P (10) 327.
glass-to-metal seals, Kovar alloy for, P (3) 102.
glass-to-metal seals, polariscope furnace for strain tests, A (11) 350.
glass-to-metal seals, studies on vacuum-tight seal, A (6) 214.
glass-molten metal (mercury), electric transport through phase boundaries, studies, A (2) 62; glass-molten salt (silver nitrate), electric transport through phase boundaries, studies, A (2) 62.
"Glass Ophthalmoprotekt," eye-protecting goggle type, A (8) 272–73.
glass seals: Pyrex-brand types, use, A (3) 100; simple strain analyzer for, A (3) 100.
glass train in England, A (9) 304.
glass wool. See *Glass, wool.*
glassblower's art, British text on, B (6) 217; glassblower's work, A (10) 326.
glassy state: fluorescence tests, A (9) 302; studies, A (3) 100–101.
glazing process and composition, P (11) 352.
gold in, determination of, VII, A (2) 64.
gold-ruby, in 19th Century, III, A (6) 215–16.
grain-surface control by crushing and sieving, A (1) 11.
grinding and polishing, A (2) 63; effect on surfaces, A (9) 303; see also *Glass apparatus; Grinding apparatus.*
"halo," bubble, and foam formation in, A (1) 10.
hard, or quartz, sealing electric conductors through, P (6) 219.
hardening process, P (7) 250, P (10) 328.
hardness of, tests, A (8) 274.
heat-absorbing types, P (2) 68, A (8) 274, P (8) 277–78.

**Glass** (*continued*)
heat-resistant: Durax type, A (1) 12; industrial uses, A (3) 99.
heat-resisting steels for, A (8) 274.
heating of liquid bath, effect on thermal strength, A (2) 61, A (4) 137.
"Hetan," lithium-beryllium-boron, absorption coefficients of, in infra-red region of spectrum, A (11) 349–50.
history of: development, A (2) 63; development of achromatic types, A (5) 177; modern era in Europe and America, B (5) 181; science and technique, A (9) 303.
holes in, boring of, A (1) 11.
hollow, double-walled, P (9) 305.
forming process, P (10) 328.
hand-blown, tests for cutting off, A (7) 248.
as industrial replacement material, A (5) 178.
melting off caps from, P (8) 278.
molding process, P (10) 328.
patterned type from opal or colored crystal flash glass, P (11) 352.
production, P (4) 141; units, P (1) 17.
thermal resistance or "chilling strength" of, determination of, A (2) 61.
homogeneous rod, relation of tensile strength to cross-section of, A (2) 65.
homogenizing process in tank furnaces, A (5) 179.
illuminating (for illumination). See *Glass for lighting*.
industrial physicist in, work of, A (7) 246.
industrial types, production, A (8) 274; industrial uses, A (11) 350.
infra-red and ultra-violet absorption of, effect of temperature on, A (11) 350–51.
inorganic, dielectric losses in, at radio frequencies, A (4) 137.
as insulating material, tests, B (10) 333; for insulating tapes, A (11) 350; see also *Insulating materials*.
insulators, for electrical use, P (3) 102.
International Glass Congress, A (11) 351.
iodometric process of de Haen or Bruhn's modification, A (1) 10.
iron determination in, A (1) 43.
iron oxide in, colorimetric method for determination, A (1) 41.
electrical resistivity of, A (9) 303.
Pratt hydrofluoric acid method, A (1) 11.
soda-lime-silica and potash-lime-silica glasses, IV, A (2) 63; dissociation of ferric oxide in, XIII, A (4) 138.
titrimetric method for analysis, A (1) 11.
isothermal creep tests of stabilized fibers, A (8) 273.
Italian, modern types, A (9) 297; in Italy, experiment station for study of, A (1) 12.
Jena, $CO_2$ adsorption by, XIV, A (2) 59.
Durax heat-resisting, A (1) 12.
hardness tests, A (8) 274.
heatproof, at Leipzig Fair, A (6) 216.
Kjeldahl flasks, "arsenfrei," A (2) 64.
kinetics of coloring of, by X-rays, A (1) 12.
$K_2O$-$4SiO_2$-$Fe_2O_3$-$SiO_2$, refractive index studies, A (10) 326.
laboratory. See also *Glass, chemical, and chemical apparatus*.
and achromatic types, history, A (5) 177.
apparatus, A (8) 274.
chemical composition, A (7) 249.
equipment, fused silica types, A (2) 62.
standard specifications (French), A (9) 305.
laminated. See also *Glass, safety, laminated*.
bond for, P (5) 183
composition, P (7) 250.
decorative treatment, P (7) 250.
Et and Me acrylate, and their polymers for, A (8) 275.
for hollow-ware, P (3) 102.
process, P (1) 16, P (2) 68, P (5) 183, P (6) 218, P (6) 219, P (9) 305.
lamps. See also *Glass for lighting; Illumination*, and cross-references.
coating discharge lamps with granular material, P (3) 102.
double-walled illuminating globes, P (7) 251.
electric, precision heat in production, A (6) 216.
fired-in colors for, A (6) 215.
frosting of bulbs, P (5) 182.
incandescent, improvements in, A (6) 216; German incandescent types, detection of boric acid in, A (2) 60.
lamp chimney, origin and history, A (2) 54.
luminescent mercury-cadmium discharge types, A (1) 13.

**Glass, lamps** (*continued*)
luminous discharge, bulb for, P (2) 67.
vehicle headlight, P (10) 328; vehicle types, P (11) 352.
lead, arsenious oxide as opacifier, A (5) 176.
lead, Czechoslovakian specifications, A (8) 275.
leers, construction, P (11) 352; see *Furnaces; Leers*.
lens for photography, P (7) 250.
light-diffusing, production, P (4) 140, P (7) 250.
light-scattering theory, A (11) 351.
light transmission in, effect of iron oxide, IV, A (2) 63.
for lighting. See also *Glass, lamps*, and cross-references.
American recommended practice in schools, A (7) 247.
discharge tube, P (1) 15.
frosted glass bulb, P (9) 305; frosted electric lamp bulbs, composition for inside coatings, P (9) 306.
illuminating glass, P (8) 278.
luminescent bulb for, A (1) 13.
review, 1916–1937, A (9) 303.
signal types in Czechoslovakia, A (8) 273.
special types, A (1) 14.
lime in, dolomitic, use, A (4) 138.
lime-soda, tempered articles of, P (4) 141.
lime-soda-silicate, artificial weathering of, A (1) 10.
and liquids, structure of, X-ray tests on, A (2) 87, A (3) 101, A (5) 181.
lithium in, use, A (11) 351.
lithium-beryllium-boron ("Hetan"), absorption coefficients of, A (11) 349–50.
lithium nitrate in, etching effect of, A (5) 178.
low-expansion, composition, P (5) 183.
luminescence and color of, effect of radium in, A (6) 216.
luminescent, P (2) 68; studies, A (3) 99, A (7) 248.
luminous letter sign, P (7) 250.
magnesia in, use, A (5) 179.
manufacture of, steps in, A (1) 11.
mat types, illuminating properties, A (7) 248.
mechanical tests on, factors in, A (5) 178.
mechanical working of, behavior, A (2) 60.
medicine bottles, durability tests, A (4) 137; see also *Glass, chemical*, and cross-references.
medieval, in Holme-by-Newark Church, Notts, A (7) 248.
melted, in blank mold, behavior of, A (5) 176.
melting of, magnetic separation of quartz sand for, A (1) 29.
melting and refining, P (7) 251, P (9) 306.
melting processes, relation of system alkali oxide–CaO–$SiO_2$–$CO_2$ to, I, A (5) 202, A (6) 234.
melting velocity of, effect of hydrated and dehydrated borax, A (6) 214.
melts for, iron oxide removal from, P (7) 251.
metal or glass plates with small holes, P (8) 278.
metal plating of, methods, A (7) 243; see also *Glass, glass-to-metal*.
metallic molds for working of, A (7) 248.
metallizing composition for, P (3) 102.
and metals, effect of pressure on modulus of rigidity of, A (7) 247.
*vs.* mica, breakdown field strength of, A (3) 99.
and mica surfaces, tests for distortion due to water films, A (1) 47.
microchemical analysis of gold detection and determination, VII, A (2) 64; of arsenic in, VIII, A (2) 64.
milk bottles, properties necessary for, A (8) 275.
Minos, chemical composition, A (5) 178.
mirror-plating apparatus, P (11) 352.
mirrors. See also *Glass, silvering of*.
aluminum, production by evaporating metal in vacuum, A (4) 139.
construction, P (2) 67; equipment and technique for, A (1) 12.
defects during production, A (1) 11.
English looking-glass plates of 17th and 18th centuries, A (8) 273.
grinding and polishing, P (10) 322.
Kaiser and Lumière methods, A (1) 13.
layout of small mirror silvering shop, A (11) 351.
parabolic, circular annealing furnace for, P (5) 182.
telescope mirrors, surface precision of, A (11) 351.

**Glass** (*continued*)
molds for. See *Glass apparatus; Molds for glass*.
molecular refractions and volumes of, A (10) 326.
molten: agitator for uniform mixtures in furnace, P (8) 276.
compounds in, discussion of, A (9) 302.
feeding method, P (1) 15, P (8) 278.
forehearth for, P (8) 277.
surface tension of, maximum bubble pressure (Jaeger) method for measurement, A (8) 275.
mosaics, process, A (4) 138.
multicellular, charcoal for, P (5) 183.
multicellular, production, P (7) 249, P (9) 306; continuous process, P (8) 277.
"multicellular," properties, A (1) 13.
multicellular sheet, P (9) 306.
multipart ware, method, P (3) 102.
neodymium, effect of light filters on colors, A (11) 350; spectral absorption of, A (10) 326–27.
nepheline syenite in, effect, A (4) 138.
nephelite in, use, A (5) 179–80.
new applications for, A (5) 178.
*vs.* nonceramic substitutes for containers, A (3) 99.
Nonsol, chemical composition, A (7) 249.
nozzle, P (9) 305.
oils on, prevention, A (6) 215.
opal, patterned hollow glassware from, P (11) 352.
Opaltone, for tinting window glass to kill sun glare, A (4) 140.
opaque, milk-white "China glass," A (5) 176.
optical, achromatic lens, discovery by Hall, A (4) 138–39.
analyzing ocular apparatus, P (2) 67.
bifocal lens, P (11) 352.
chemical resistance, A (7) 247.
chilling and tempering of, refractive-index changes in, A (1) 14.
and colored, infra-red and ultra-violet measurements, A (11) 350–51.
composition, P (7) 250; production, P (5) 183, P (8) 278.
composition of glass blanks for spectacles, A (2) 64.
development, work of Otto Schott, A (5) 177.
developments, II, A (9) 303.
and elastic behavior, formula, A (10) 326.
elastic constants from bending of light by supersonic vibrations, A (5) 177.
eye-protecting goggle type, A (8) 272–73.
in Germany, historical sketch, A (4) 138–39.
ground and polished, load test, A (2) 65.
heavy baryta crown, melting processes, A (2) 64.
or heavy lead crystal, spot sensitivity method, A (6) 214.
lead oxide in, viscosity of, A (2) 66.
lens manufacture, P (1) 16, P (6) 218.
lenses and mirrors, construction, P (2) 67.
luminous analysis for classification, A (2) 66.
manufacture at Askania Works, A (7) 248.
marking polished ware, P (1) 16.
method for abrading lenses, P (3) 102.
multifocal lens, P (1) 16, P (9) 306; multilayer, for spectacles, P (3) 102.
at Nat. Bur. Stand., A (11) 351.
nomenclature and use, systems of, A (11) 351.
ophthalmic lens, P (6) 219; correction of ametropia and aniseikonia with, A (1) 28.
ophthalmic mounting, P (11) 352.
and ophthalmological, properties, A (11) 351.
patent designs, P (1) 16.
phosphate and borate types, and beryllium fluoride, A (11) 351.
polishing, effect of polishing conditions and composition of polishing media on rate of, A (2) 61.
requirements, A (11) 351.
research at Mellon Inst., A (2) 65.
safety goggles, A (2) 79.
spectacles, statistical methods, A (9) 305.
sun-protecting, coloring agents for, A (2) 64.
in U. S., availability and data, A (11) 349.
viscosity studies, A (2) 63–64.
optical contact of, methods, A (1) 12.
optical contact studies: on glass surfaces, A (1) 12; reflecting power of polished silica surface, A (1) 14.

**Glass** (*continued*)
- oxides in, effect of amount of, on thermal endurance, A (4) 137.
- oxides in, use of Gehlhoff and Thomas specific effect data, A, (4) 140.
- oxygen adsorption of, measurement of, at liquid oxygen temperatures, A (1) 13.
- oxygen-releasing compounds in, for melting and fining process, A (6) 214.
- painting glass panels in Baltic states, A (6) 209.
- parabola film, A (8) 275.
- Parisio decorative method, A (8) 275.
- patent designs for ashtrays, P (1) 5, P (3) 93, P (6) 211, P (8) 271, P (9) 298.
  - automobile headlight lens, P (3) 93.
  - bobèche, P (6) 211.
  - bookend, P (1) 5.
  - bottles, P (1) 5, P (2) 54, P (3) 93, P (5) 172, P (6) 211, P (7) 244, P (8) 271, P (9) 298, P (10) 323, P (11) 347.
  - bowl, P (1) 5, P (2) 54.
  - candlestick, P (4) 130.
  - canister, P (1) 5.
  - casserole, P (10) 323.
  - coffee makers, P (4) 140.
  - combination coaster and ashtray, P (7) 244.
  - combined bowl and base, P (10) 323; combined butter and almond tub, P (1) 5.
  - console bowl, P (6) 211.
  - corner molding strip unit, P (10) 323.
  - covered dish, P (4) 130.
  - covered jar, P (4) 130; covered candy jar, P (4) 130.
  - cream pitcher, P (4) 131.
  - cup, P (4) 131, P (10) 323.
  - decanter, P (6) 211, P (10) 323.
  - deep bowl, P (1) 5.
  - dish, P (2) 54.
  - drinking glass, P (4) 131, P (10) 323.
  - flask, P (2) 54.
  - flower exhibiting device, P (9) 298.
  - glass jar closures, P (4) 140.
  - goblets, P (2) 54, P (3) 94, P (4) 131, P (5) 172, P (6) 211, P (7) 244, P (8) 271, P (9) 298, P (10) 323.
  - handle, P (6) 218.
  - hollow double-wall reflector, P (1) 5.
  - jars, P (1) 5, P (2) 54, P (3) 94, P (4) 131, P (5) 172, P (10) 323.
  - jug, P (5) 172, P (7) 244, P (10) 323.
  - mayonnaise bowl, P (4) 131.
  - medicine bottle, P (9) 298.
  - milk bottle, P (7) 244.
  - milk pitcher, P (1) 5.
  - mixing bowl, P (5) 172.
  - nappy, P (1) 5.
  - oval relish tray, P (1) 5.
  - packer jar, P (3) 94.
  - plates, P (3) 94, P (5) 172, P (8) 271.
  - relish tray, P (5) 172.
  - salad bowl, P (6) 211; salad plate, P (3) 94.
  - salt shaker, P (4) 131.
  - siphon head, P (6) 211.
  - stemmed goblets, P (3) 94, P (5) 172.
  - sugar bowl, P (1) 5.
  - torte plate, P (3) 94.
  - tray, P (5) 172.
  - tumblers, P (1) 5, P (2) 54, P (3) 94, P (4) 131, P (5) 172, P (6) 211, P (7) 244, P (9) 298.
  - vase, P (7) 244.
  - water pitcher, P (7) 244.
- peat slag in, for black glass of marbleite type, A (1) 10–11.
- percussion method for fracture of, A (7) 247.
- pharmaceutical. See *Glass, chemical*, and cross-references.
- phosphate, for parts exposed to vaporous alkali or other light-metal liquids, P (9) 306.
- phosphate, red coloration of, A (5) 180.
- phosphorescent, structure, A (2) 65–66.
- with phosphorus pentoxide ($P_2O_5$), $Al_2O_3$, $B_2O_3$, and $SiO_2$, survey for preparation of, A (9) 304.
- photoluminescent, production, P (5) 183.
- physical chemistry of, Belgian course, B (8) 276.
- physical properties of, constant temperature and humidity chamber for, A (9) 302.
- physical properties of, refractive index measurements, III, A (9) 301–302.
- physical properties of, studies, A (9) 305.
- physicochemical bases, B (10) 327.
- pigments for, materials and compounds for, A (6) 209; see also *Glass, colored*.
- pipes, process, P (6) 219, A (8) 274.
- for piping installations for hot-water heaters, A (5) 176.
- plastic relief by sandblast decoration, P (3) 102.
- plasticity and viscosity of, transformation points in, A (5) 180.
- plate, air-cooling process, P (11) 352.
- plate, colored, process, P (7) 250.
- plate, effect of direction of drawing on tensile strength, A (2) 61; heat-strengthened, refractive index, A (1) 13–14.
- plate, for moving-picture studios, A (8) 273.
- plates, parallelism of, test method, A (3) 101.
- Plexi, permeability for ultra-violet light, A (4) 139.
- Polaroid, composition and application, A (1) 10; optical properties of Polaroid for visible light, A (3) 100.
- polished, marking of, P (1) 16.
- porous filter, application, A (8) 274; for porous filter bodies, process, P (7) 250.
- potassium carbonate and nitrate for, A (10) 326.
- pots. See *Pots, glass*.
- powder method for durability of, work of Glass Div., American Ceramic Society Comm., A (1) 14.
- powdered, sintering properties, A (6) 237.
- praseodymium and neodymium types, studies on constitution, A (2) 66.
- pressed, A (3) 100.
- printing process, A (6) 210; machine for, P (5) 194; see also *Glass, decorated*.
- profiled, in window glazing, A (6) 217.
- Pyrex-brand, cesium and potassium on surfaces for resistivity of thin metallic films, II, A (11) 350.
  - for chemical apparatus, properties, A (2) 63.
  - chemical composition, A (7) 249.
  - drier tube, A (2) 64–65.
  - for electric lamps, A (6) 216.
  - glass seals, use, A (3) 100.
  - impinger, A (9) 309–10.
  - or Jena vessels for quantitative determinations of boron, A (6) 217.
  - and silica, and metals, modulus of rigidity tests, A (7) 247.
- quartz, crystallization of, effect of additions on speed of, A (6) 215.
- quartz, devitrification, effect of raw materials on, A (5) 177–78.
- quartz, for tungsten or molybdenum conductors, vacuum-tight sealing of, P (9) 306.
- quartz envelopes, sealing of electric conductors into, P (3) 102.
- radioactive indicators for chemical resistance tests, A (2) 60.
- radium adsorption by, A (6) 214.
- Raman spectra in, studies, A (1) 13.
- rare earths for, A (8) 274.
- raw materials in Europe, tests, A (8) 275.
- reaction-rate theory of viscosity in, A (7) 249.
- reaction velocity in, dependence on physical properties and chemical composition of raw materials, III, A (6) 214.
- red coloration from exposure to phosphorus compounds, A (5) 180.
- refining process, A (2) 65.
- reflecting power of polished silica surface, A (1) 14.
- reflectors: Dorplat (of Frauenhofer), A (4) 139; hollow double-wall type, P (1) 5; patent design, P (3) 102.
- refraction and volume studies, A (10) 326.
- refractive index of: effect of strains, A (9) 304; variations below 500°C, A (2) 65.
- refractor, P (2) 68.
- refractory, for contacting molten glass, P (4) 141.
- refractory types, P (3) 102.
- research, in Germany, A (8) 273.
- Resista, chemical composition, A (7) 249.
- revolution in manufacture, A (3) 100.
- rods. See also *Glass, tubes, rods, or tubing*.
- rods, tensile strength *vs.* cross-section, relation, A (2) 65.
- rods, thermal endurance tests, A (4) 137, A (4) 139; Babinet compensator for stress measurements, III, A (9) 305.
- rods, thermal shock tests, A (2) 60.
- rolling of, temperature regulation in, P (10) 328.
- rosaline, production, A (5) 179.
- ruby, gold-ruby, in Middle Ages, I; in 15th Century, II, A (5) 179; in 19th Century, III, A (8) 215–16; see also *Glass, colored*.
- ruby formation on worn-out refractory block, A (6) 217.
- ruby sheet, composition and production, A (7) 248.
- rupture tests, A (5) 179.
- safety. See also *Glass, hardened; Glass, laminated; Glass, tempered; Glass apparatus for safety glass*.
  - for automobiles, A (8) 275.
  - bonded layers, P (10) 328.
  - cellulose acetate plastic bonded, chemical research on, V, A (10) 326.
  - clear transparent, process, P (11) 352.
  - clear-vision antiglare windshield, P (2) 67.
  - coating with polymerized vinyl compounds, P (4) 140.
  - composition, P (3) 102.
  - compound: or other laminated types, P (1) 17; process, P (9) 305.
  - Czechoslovak protective type for goggles, A (8) 272–73.
  - French Securit and Japanese and Czechoslovak types, solubility, A (4) 136–37.
  - heating method, P (10) 328.
  - isobutylene polymer layer for, P (10) 327.
  - laminated: composition, P (3) 102; glycerine bonds for, A (9) 301.
  - laminated or compounded, P (6) 218; sealing of, P (6) 219.
  - multilayer, cooling and heating velocity of, A (2) 66; multilayer shatterproof, P (10) 328.
  - nonbreakable and noncracking, A (8) 275; nonsplintering, P (8) 278.
  - plate, production process, A (11) 351.
  - process, P (1) 17, P (2) 68, P (4) 141, P (7) 251.
  - protective, P (7) 251, P (8) 278.
  - Securit, A (1) 14.
  - splinterless, "Thorax-Restex" for bridge girders, A (9) 305.
  - standard tests, A (4) 139.
  - for windshields (German), A (8) 276.
- saltpeter and arsenic trioxide in, effect of heat on, A (4) 136.
- and salts in melt, electromotive forces between, A (11) 350.
- sand for: chemical washing plant for, A (4) 156; maximum grain size, A (5) 179; specifications, A (5) 178–79; see also *Sands, glass*.
- scattering of light, theory, A (11) 351.
- Schott, dielectric constant and dipole losses of, A (10) 326.
- screw mouth double-walled vessels, production, P (7) 251.
- sculptured crystal tables, A (7) 243.
- seedless, in continuous tanks, process, A (2) 65.
- selenium ruby, multipot furnaces for production, A (11) 351.
- sessile-drop method for surface tension and density measurements of viscous liquids at high temperatures, I, A (7) 249.
- severing and reuniting parts of, P (7) 251.
- sheet, effect of transverse scratches on strength, A (9) 302–303.
  - permeability to ultra-violet rays, A (11) 351.
  - or plate, colored and tempered, P (1) 17.
  - and plate, strength tests on, Marcus formula, A (11) 349.
  - process, P (7) 249, P (7) 250, P (8) 277, P (9) 306; drawing process, P (8) 277, P (11) 352.
  - ultra-violet light transmission of, A (11) 351–52.
- signal, Czechoslovak types, A (8) 273.
- silica, helium passage at ordinary temperatures, A (1) 44.
- silica, structure of: electron diffraction studies, A (1) 43; by X-ray diffraction studies, A (3) 101.
- silica, for tungsten or molybdenum conductors, vacuum-tight sealing of, P (9) 306.
- silica preparation for, P (4) 141.
- silicate, properties of, compared with transparent synthetic materials, A (5) 180.
- and silicates, infra-red spectrum and structure, A (4) 138, A (10) 325.
- siliceous and aluminous raw materials for, A (8) 275.
- $SiO_2$–CaO–$Na_2O$, Na–Mg, and Na–Al, studies on, A (9) 303.
- $6SiO_2 + Na_2CO_3 + CaCO_3$, reactions in: effect of alumina, A (9) 302; effect of sodium sulfate, A (9) 302; effect of water, A (9) 302.
- silk, as insulating material, A (2) 63, A (9) 303; see also *Glass, fiber*, and cross-references.
- silver diffusion in, A (3) 99.
- silvering of. See also *Glass, mirrors; Glass, reflectors*.
  - control methods, A (2) 64.

**Glass,** silvering (*continued*)
effect of chemical pretreatment of glass surface, A (2) 61.
Kaiser and Lumière methods, A (1) 13.
method, P (3) 102; since 1930, A (8) 274.
process, effect of chemical composition on silvering bath, A (5) 177.
sintering of glass batch, P (7) 251.
Society of Glass Technology (English), 21st Ann., A (9) 304.
soda-boric oxide, X-ray diffraction study, A (9) 305.
soda-lime-magnesia, durability, A (2) 60.
soda-lime-silica, analytical methods for tests, A (1) 11.
soda-lime-silica, elastico-viscous properties at temperatures near transformation point, A (8) 273; criticism of, A (9) 308; reply and formulas for, A (9) 303.
soda-lime-silica, Mylius system for classification, A (7) 247.
soda-potash-lime, effect of chemical composition and heat treatment on water solubility of, A (4) 136–37.
soda-silica, Fourier analysis of X-ray patterns of, A (8) 273.
sodium-lead-silica, surface tension studies, A (1) 14.
sodium silicate, di-, $Na_2Si_2O_5$, vitreous and crystalline conditions in, A (7) 248.
sodium sulfate in $6SiO_2 + Na_2CO_3 + CaCO_3$ mixtures, effect, A (9) 302.
softening at high temperatures, A (8) 275.
for soundproofing plants, A (10) 326.
special types, chemical composition, A (5) 178.
spectral analysis in continuous and interrupted arc, quantitative chemical analyses, A (6) 217.
spectrographic methods for analysis, A (1) 41.
spectrum analyses for, and use of electric arc in, A (6) 217.
spun: for heat- and sound-insulating bodies, P (7) 250; for railway insulation, A (1) 14; see also *Glass, fiber.*
stained, church windows and leaded panels of R. Lardeur, A (6) 209.
in French cathedrals, 12th and 13th centuries, B (8) 270.
historical review of ancient Belgian churches, A (2) 53.
history and appreciation of, A.D. 1000–1500, A (7) 249; 12th and 13th centuries, grisaille glass, A (11) 347.
medieval, in Holme-by-Newark Church, A (7) 248; medieval heraldry in painted glass, A (11) 347.
modern types compared with Middle Ages, A (1) 4.
and painted, in England, B (6) 210–11; from 16th Century, survey, A (2) 54.
painting panels of, in Baltic states, A (6) 209.
processes of Saint-Just-sur-Loire, A (8) 275.
relation to light and color, B (3) 93.
in Schiff Collection, A (10) 323.
12th to 16th Century work, A (5) 171.
"Vitrail," A (7) 249.
Walpole Collection, A (7) 249.
of Yorkminster, B (8) 270.
statistical methods for spectacle manufacture, A (9) 305.
Steuben, Waugh's designs for, A (6) 210.
strains in. See also *Glass, defects in.*
birefringence measurements for strength tests, A (8) 275.
cause and effect, A (4) 136; annealing method, II, A (10) 327.
cylindrical glass seal, method of measurement, A (3) 100.
effect on refractive index, A (9) 304.
at high temperatures, polariscope furnace for tests, A (11) 350.
Labscope for tests, A (8) 283.
strength of. See also *Glass, chemical durability (chemical resistance); Glass, thermal durability.*
chemical, *vs.* thermal treatment, A (7) 247.
cylindrical types, effect of temperature, A (2) 66.
detection of breaks from slow loading, A (2) 65.
effect of flaws and scratches, A (1) 11; effect of specimen width, A (4) 138; effect of transverse scratches, A (9) 302–303.
effect of loading velocity and form of loading curve, A (1) 12.
equation for relation of strength to permanent loading, A (1) 12.
and homogeneity, A (8) 275.
**Glass,** strength of (*continued*)
mechanical strength properties, A (5) 179.
shearing strength of glass rods, A (2) 65.
strength tests, Marcus formula, A (11) 349.
tensile tests on plastically deformed glass rods, A (2) 66.
structural types. See *Structural materials, glass.*
structure of. See *Glass, chemical composition (constitution).*
$SO_3$ content of, dependence on furnace atmosphere, A (6) 214.
sulfuric acid as protection from grease, A (4) 137.
surface of, method for optical contact, A (1) 12.
surface changes: during grinding and polishing, A (9) 302, A (10) 321; effect of grinding and polishing, A (9) 303; tests, A (9) 302.
surface tension of, effect on melting process, A (9) 304.
fiber-weight method, A (9) 304.
maximum bubble pressure method, A (8) 275.
methods, A (8) 275.
in sodium-lead-silica types, A (1) 14.
of viscous liquids, A (11) 351.
in Sweden, history and types A (7) 247–48, A (9) 297.
Syrian vase of pre-Islamic period, A (2) 54.
technical. See also *Glass, chemical,* and cross-references.
technical, boric oxide in, data, A (2) 66, A (4) 139.
technical and heat-resisting, review of British development, 1916–1937, A (9) 303.
technology of, batches, furnaces types, and methods of making, I, A (4) 138.
technology, penetration factor of, A (5) 181.
technology review in U. S. since 1915, A (8) 272.
temperature control for molten streams, P (7) 251; regulation of glass stream feeding sheet glass rolls, P (8) 278.
tempered. See also *Glass, safety,* and cross-references.
tempered, internal stress reduction in, P (7) 251.
tempered, methods, P (1) 17, P (4) 141, P (5) 183, P (5) 184, P (6) 219.
tempered plate, refraction of, A (1) 13–14.
tempering with air, review of methods and apparatus for, A (10) 327.
tempering and annealing of, dilatometric tests, A (4) 137.
tempering of, chilling baths for, P (4) 140.
tempering method for, P (1) 16, P (6) 218, P (8) 277, P (8) 278–79, P (9) 306, P (10) 328.
tensile tests, A (11) 351.
textile materials of. See also *Glass, fiber; Glass, thread; Glass, wool; Insulating materials, glass.*
thermal conductivity of, relative comparison method, A (1) 15.
thermal durability (thermal endurance). See also *Glass, chemical durability.*
definition and factors in, A (4) 139; Babinet compensator method for stress measurements, III, A (9) 305.
effect of heating bath liquid on, A (2) 61, A (4) 137.
glass tubing, test, A (4) 139–40.
methods, A (4) 137, A (9) 304.
mixed alkali-boric oxide-silica types, A (4) 139.
resistance *vs.* chemical durability, A (2) 63; shock resistance, A (2) 60.
test for hollow ware, A (4) 140.
thermal history of, effect on composition and workability, A (1) 12.
thermal physics of, II, B (3) 101.
thermal properties of, method, I, A (5) 181.
thermal strength of. See *Glass, strength; Glass, thermal durability.*
thermal treatment of, P (8) 279.
Thermolux, for heat insulation, A (9) 303.
thermometers: stabilizing of, P (6) 219; stabilizing annealed glassware, P (5) 183.
thermometric, physicochemical properties and composition, A (3) 99.
"Thorax-Restex," splinterless, for use with steel and concrete, A (9) 305.
thread mats, spinning of, P (6) 219; threads or filaments of, method for winding, P (9) 306; threads, production, P (6) 218, P (9) 306; see also *Glass, fiber.*
three-component types, relation between optical constants and structure, IV–V, A (3) 100.
**Glass** (*continued*)
Thüringian apparatus glass rods, effect of loading rate on tensile strength, A (2) 61.
trade names for. See *Trade names.*
transformation points: studies, A (5) 180; volume-temperature study, A (10) 325.
transparent, halogens in, A (2) 63.
transparent methacrylate polymerides as substitutes for, A (9) 319.
transparent quartz, effect of heat treatment on mechanical strength of, A (2) 61.
transparent vitreous, composition, P (8) 279.
transverse strength of, studies, A (1) 11.
treating of, means and methods, P (1) 17, P (8) 278.
troughs, composition for blocks of, P (11) 357.
tubes, rods, or tubing. See also *Glass apparatus for tubes.*
coloration of luminous types, A (2) 66.
exact internal form, P (2) 68.
ground-glass joints, stresses in, A (3) 99.
high-frequency discharge test, A (2) 62.
with multilayer walls, P (2) 68.
plastically deformed, tensile strength tests, A (2) 66.
production, P (2) 68.
Pyrex-brand drier tube, A (2) 64–65.
shear strength, A (2) 65; effect of temperature on, A (2) 66.
tensile strength, effect of loading rate and torsional deformation, A (2) 61.
vacuum-jacketed, P (8) 279.
turned and milled, Widia steel tools for, A (8) 276.
ultra-violet and infra-red absorption, effect of temperature on, A (11) 350–51.
ultra-violet light absorption of, effect of rare earths on, and color changeability of, A (11) 350.
ultra-violet light transmission of sheet glass, A (11) 351.
ultra-violet ray permeability of sheet glass, A (11) 351.
in vacuum technique, data, A (2) 63.
vacuum-tight ceramic bodies suitable for sealing to soft glass, P (8) 279.
vacuum-tight joints in thermionic valves, A (11) 350; vacuum-tight seal, studies, A (6) 214.
variegated sheets, production, P (6) 219.
Venetian, modern, A (7) 243.
Vienna, Franz Ruhmann Collection, I, A (4) 137.
viscosity of, apparatus for transformation-point tests, A (9) 302.
data, A (5) 180; tests, A (8) 276.
effect of temperature on, A (2) 63.
and electrical conductivity studies, A (10) 327.
of lead oxide optical types, A (2) 66.
reaction-rate theory, A (7) 249.
and surface tension, effect of atmosphere on, A (9) 302.
viscous liquids, surface-tension measurements, A (11) 351.
vitreous, production, P (2) 68, A (5) 180; translucent, and nonporous silica ware, production, P (9) 306; see also *Vitreous bodies.*
vitreous coating sprayed on for coloring, P (8) 277.
"vitreous fusion" of, studies, A (5) 181.
vitreous selenium and colophony, volume-temperature study, A (10) 325–26.
vitreous state of, oxides for, A (5) 181.
watch types, manufacture, A (1) 13.
water adsorption on, chemical reactions, A (2) 60.
water solubility, effect of chemical composition on, V, A (4) 136.
weathered, appearance of, A (1) 10.
Willson products for industrial safety, B (7) 258.
window. See also *Glass, stained.*
chemical composition of, automatic drawing process, A (1) 11.
double-walled window-panes, drawing process, P (7) 250; double-window construction, P (4) 140.
glazed and unglazed, daylight factor diagrams in, A (4) 137.
invisible (curved), A (6) 216.
nonreflecting bent type, A (3) 99–100.
*vs.* Plexi, for ultra-violet permeability, A (4) 139.
profile types for, A (6) 217.
strength computation, A (11) 349.
thermic ray permeability, A (4) 139.
tinted, to kill glare, Opaltone, A (4) 140.
wire fabric as wired-glass substitute, P (8) 279.

**Glass** (*continued*)
wired, for hollow glassware, P (1) 16.
wool: method and product for treatment, P (4) 141; production, A (5) 179; production and use, A (11) 350; and yarn for textile industry, A (3) 99; see also *Glass, fiber*, and cross-references.
zinc borate, effect of radium on luminescence and color of, A (6) 216.
zinc oxide in, use and replacement by other materials, A (2) 67.
zinc oxide and zinc white in, production methods, A (6) 231.

**Glass apparatus.** See also *Furnaces, annealing; Furnaces for glass production; Leers; Pots; Refractories for glassmelting furnaces; Tanks.*
agitator for uniform mixtures of molten glass in furnace, P (8) 276.
alloys for, heat-resisting nickel types, A (5) 192.
for ampullas, P (4) 141; automatic, for ampullas from glass tubes, P (5) 182.
analyzing ocular, P (2) 67.
for annealing drawn glass, P (8) 276; see also *Annealing.*
automatic, for feeding furnaces, P (5) 182.
automatic, glassblowing, in Germany, A (8) 272.
automatic glassblowing and suction type, P (9) 305.
for bands or fibers, P (5) 182.
for bending glass sheets, P (5) 182.
for blowing bottles, P (1) 15; for blowing and cooling, P (9) 305; for blowing glass, P (2) 67–68.
blowpipe, P (10) 328.
for bottles, P (1) 15, P (5) 182, P (6) 218, P (8) 278; feed-regulating mechanism, P (8) 277; forming conical necks on, P (7) 250.
ceramic mold, P (8) 277.
for charging leers for cooling glass, P (6) 217.
for coating electric-lamp bulbs on both sides, P (5) 182.
for colored or modified glass, P (8) 276.
for controlling feed charges to glassblowing machine, P (6) 217.
for cooling glass, P (5) 182; for tempering, P (4) 140.
for cutting glass, process, P (1) 15, A (7) 247, P (8) 277; cutting into plates, P (7) 249; cutting sheet glass, P (10) 327.
cutting rule, P (3) 102.
for decorating bottles, P (11) 352; for decorating sheet glass, A (9) 304; for tumbler decoration, P (1) 17.
for double-walled glass vessels, P (2) 68.
for drawing double-layer glass in horizontal direction, P (7) 250; for drawing double-walled window-panes, P (7) 250.
for drawing glass, P (1) 15, P (3) 102, P (8) 277; for drawing glass strip P (1) 15, P (5) 182.
for drawing sheet glass, P (3) 101, P (4) 141, P (5) 182, P (6) 217, P (10) 327, P (11) 352; vertical process, P (6) 217.
for electrical heating, P (6) 218.
for endless glass band from fused glass, P (3) 101.
feeders, P (7) 250; dual orifice type, P (5) 182; and method, P (6) 208.
for feeding glass, P (1) 15, P (4) 140, P (6) 218, P (10) 328; to forming machines, P (4) 141; to shaping machines, P (4) 141.
for feeding molten glass, P (1) 15, P (2) 68, P (3) 102, P (5) 182, P (6) 219, P (9) 305–306, P (11) 352; for feeding charges of molten glass, P (10) 327.
for fiber glass, P (3) 101, P (5) 182, P (11) 352; for drawing fibers, P (2) 68, P (6) 217; for forming tensionless glass fibers, P (8) 276.
for finishing tableware, A (9) 304.
fireproof top receiving table, P (9) 306.
for forming glass, P (1) 16, P (5) 183, P (9) 305, P (11) 352; for hollow glass, P (1) 15; for molds, P (5) 183.
forming mold bottom closure, P (8) 277.
for fusing glass, P (11) 352.
German patent literature for 10 years, A (8) 273.
glass-grinding tables, device for feeding abrasives to, P (10) 322.
for glass-to-metal sealing, P (2) 67, P (9) 305; see also *Glass, glass-to-metal.*
for glass rods, Thüringian type, A (2) 61.
for glass vessels from tubing, P (2) 68.
glassworking press, P (9) 305; press, P (7) 250.
for grinding glass P (11) 352; grinding and cutting tools, A (2) 63, A (8) 274; grinding clock glass in all forms, A (8) 272;

**Glass apparatus** for grinding (*continued*)
grinding wheel, P (11) 346; see also *Grinding apparatus for grinding or polishing.*
guide and deflector for glass charges, P (7) 250.
for handling sheet glass, P (4) 141.
for hardening glass, P (2) 67; for hardening sheet glass by air cooling, P (2) 67.
for hollow glass, P (1) 16 P (4) 140, P (10) 328; hollow glass with ornamented surface, P (1) 15; for molding hollow glass, P (2) 67, P (5) 183.
for intermittent production of rolled glass plates, P (9) 305.
leer loader, dual-type, P (6) 217.
for marking ware, P (6) 217; for marking or decorating ware, P (5) 194.
for melting glass, P (4) 140.
for molding glass, P (7) 251.
for molten glass: distribution, P (11) 352; refractory clay with alloy covering, P (11) 352.
optical: bifocal, P (5) 182; for cutting lenses, watch glasses, etc., P (10) 328; ophthalmic mounting, P (11) 352; see also *Glass, optical.*
patent designs, P (1) 15–17, P (2) 67–68, P (3) 101–102, P (4) 140–41, P (5) 182–84, P (6) 217–19, P (7) 249–51, P (8) 276–79, P (9) 305–306, P (10) 327–28, P (11) 352.
for pharmaceutical types, A (5) 178.
for plate glass during thermal treatment, P (5) 183; plate-glass transfer and turnover type, P (3) 102; table for plate glass, P (9) 306.
for polishing. See *Grinding apparatus; Grinding.*
for removing lengths from glass strip, P (5) 182.
for safety glass: nonsplintering, P (5) 182; press for multilayer shatterproof glass, P (10) 328; safety glass take-out, P (1) 17; see also *Glass, safety.*
semiautomatic, for shearing charges of, P (7) 251.
for severing molten glass, P (5) 183.
for shaping bodies, P (3) 102, P (7) 250.
for sheet glass, P (1) 17, P (4) 140, P (5) 182, P (10) 327; for bending of, P (5) 182; support for, P (2) 68, P (3) 102, P (7) 249; surfacing of, P (9) 305; for variegated sheet glass, P (5) 183.
with sintered portions as integral part, A (2) 63.
for stoppers and bottles, P (1) 16.
for striated glass, P (2) 67.
suction-forming, P (8) 278.
for surface-treating glass containers, P (5) 182.
for tempering glass, P (1) 15–16, P (4) 140, P (5) 183, P (6) 218, P (10) 328, P (11) 352; for sheet glass, P (1) 17, P (8) 276; for tempering sheet glass by jets of air, P (8) 276.
for threads, P (10) 327; see also *Glass, fiber.*
transfer mechanism, P (1) 16.
for treating glass, P (8) 277; sheet glass, P (8) 276–77.
for tubes, cutter, P (10) 328.
for tubes or cylinders, P (1) 17, P (8) 276.
for tubes of larger diameter, continuous drawing, P (10) 327.
for tubes and rods, P (11) 352; drawing chamber for, P (7) 249; severing of, P (9) 305; vitreous, severing of, P (6) 217.
universal type for working glass, A (1) 15.
Widia steel tools for turning and milling, A (8) 276.
for working glass, P (6) 219.

**Glass industry,** American, developments in 1931–38, A (10) 326; development in U. S., data, A (2) 63; in New England, history, A (3) 99.
cost of compressed air in, A (5) 192.
development and history, A (2) 63.
financial statements for short periods in hollow glass factories, A (5) 203.
In Italy: architectural applications, A (1) 12; national experiment station for study of glass, A (1) 12.
labor protection, B (2) 90.
metallurgical needs, I, A (1) 13.
in Russia, 1937, A (9) 304.

**Glass plants,** Askania Works, optical glass production, A (7) 248.
Bausch & Lomb Optical Co., research at Mellon Inst., A (2) 65.
experiences in, A (5) 179.
in Germany, history, I, A (6) 216; II, A (7) 248.

**Glass plants** (*continued*)
Owens-Illinois Glass Co.: glass block for locker rooms, A (11) 350; research laboratory dedication, A (1) 47; structural products laboratory, A (5) 179.
Saint Gobain at International Exhibition of Paris, A (2) 65.
small mirror silvering shop, layout, A (11) 351.

**Glassteel diffuser** for lighting plants, A (9) 300; for mercury lighting, A (9) 300.

**Glass tanks.** See *Furnaces, glass tanks; Tanks, glassmelting.*

**Glass wool.** See *Glass, wool,* and cross-references.

**Glasshouse refractories.** See *Refractories for glassmelting furnaces.*

**Glauconite,** chemical nature and formation, A (7) 261.

**Glaze apparatus,** automatic, for glass products, A (3) 109.

**Glazes,** blue, cobalt oxide for, A (5) 174.
CaO in, effect on shrinkage of porcelain, A (7) 257.
and ceramic bodies, stress measurement, A (8) 284–85.
and ceramic pigments, classification, and review, A (6) 209.
coat-type, batch analyses, A (5) 174.
colorless, composition, P (9) 301.
colors for, A (7) 242; on decorative ceramics, A (7) 242; pigment additions, A (11) 347.
crystalline, for facing subway, A (2) 76.
defects in, crazing, A (8) 293; types of crazing on wall tile, A (3) 108.
discoloration of commercial titanium dioxide in daylight, A (1) 42.
on earthenware, A (1) 26.
glost warping, A (2) 76.
"smoking" discoloration, A (3) 109.
earthenware, action on bodies in glost kiln, A (3) 107–108; for earthenware tile, application, P (5) 286.
and enamel slips, micrometer for measurement, A (6) 226.
experimental, tests, A (11) 358–59.
flow on horizontal and inclined surfaces, A (3) 107.
fusible, without boric acid and lead, compositions, A (2) 53.
lead: composition, P (11) 359; processes, P (10) 323.
lead, and lead poisoning, tests, A (11) 359.
with lead, and leadless, examples, A (6) 210.
lead-fritted, studies, B (1) 26.
leadless unfritted, A (2) 54.
life history, maturing data, I; stress measurement in cooling glaze, II, A (8) 283.
mat and crystalline types for fireplace tile, A (3) 93.
molecular formulas, A (3) 120.
and opaque enamels, composition, P (5) 175–76.
plastic, for ceramic decoration, P (1) 5.
plumbiferous overglaze colors for, I–II, A (4) 148.
porcelain, Hagendorf feldspar for, A (8) 283.
porcelain, "smoking" test, A (3) 109.
pottery, gold substitute, P (5) 176.
resistant, for chemical equipment, A (5) 191.
salt, for stoneware pipes and fittings, studies, A (1) 17, A (1) 25, A (2) 76, A (5) 191.
salvaging glaze materials by electrostatic process, A (3) 111.
"soft," of low thermal expansion, A (4) 130.
transparent bodies, stress measurement by photoelastic polariscope, A (8) 285.
underglaze and overglaze colors, recipes, A (11) 347.
and underslips for covering surface imperfections, A (3) 107.
wetting and flow characteristics, effect of different bodies on, A (8) 282.
for whiteware, darkening in decorating kiln, A (3) 108.
zinc, for earthenware, A (2) 77.

**Glazing** and associated treatment of tile, P (6) 223.
of ceramic ware, slip for, P (4) 167.
for glass, building blocks, A (6) 215.
of glass, composition, P (11) 352.
methods, A (6) 209.
window, profiled glasses for, A (6) 217.

**"Glimmschicht"** (cathode layer), for spectrum analysis of minerals, B (10) 341.

**Gloss meter,** construction and use, A (10) 334; photoelectric type, P (10) 336.

**Glucinium.** See *Beryllium.*

**Glycerine** for laminated safety glass, A (9) 301.

**Gneisses** and sillimanitic granulites, genetics, A (3) 115.
**Goldschmidt-Mannkopff method** for beryllium determination in bauxites, A (6) 229.
**"Graal" glass,** Swedish production, A (7) 248.
**Grain size.** See also *Granular materials; Particle size; Screens; Sieves.*
electric apparatus for range of, P (9) 311.
grain-growth studies, use of expansion pyrometer, A (2) 77.
Jones sample splitter, statistical method for improvements, A (4) 152.
of quartz, relation to properties of hard porcelain, I–II, A (6) 224.
of sands for classification, II, A (4) 136.
screen openings for unconsolidated sands, A (4) 152.
size reduction by impact, A (9) 311.
of suspended particles, sedimentograph for, A (8) 285.
**Grain structure** or fiber structure of solids, studies, A (4) 161–62.
**Granular materials.** See also *Abrasives.*
agglomerated, composition, P (8) 268.
apparatus for measuring quantities, P (3) 112; automatic apparatus for delivering predetermined quantities, P (7) 259.
with different flow rates, sintering system, P (2) 80.
drier, P (4) 153.
or pulverulent materials, mixing machine for, P (2) 80.
**Granules,** colored mineral, production, P (1) 47.
crushing strength, compression tester for, A (5) 192.
production method, P (1) 47.
roofing, and method of coloring, P (9) 319.
**Granulites,** anthophyllite-cordierite, of Cornwall, A (3) 114.
sillimanitic, and gneisses, genetics of, A (3) 115.
**Graphite,** formation in gray cast iron, A (4) 135.
genetic types, classification, A (4) 156.
**Graphite crucibles.** See *Crucibles.*
**Graphite resistors,** process of sealing into refractory protection tube, P (1) 34.
**Graphs** and calculations in ceramics, B (7) 264; see also *Research.*
**Gravimetric analysis** for natural minerals and rocks, B (4) 164.
**Gravity separation,** theories, A (8) 284.
**Greenburg-Smith impingers** *vs.* Hatch type, comparative tests with, A (9) 309; Greenburg-Smith impinger with Sedgwick-Rafter counting cells for dust counts, A (9) 310.
**Grenz ray radiography** for photographic structure studies, A (6) 224.
**Grindability,** "structure tester" for, A (8) 284.
**Grinding.** See also *Polishing,* and various types of grinding apparatus.
of ceramic materials in various types of mills, A (2) 78.
chart of recommendation for grinding wheels, A (9) 295.
classification trends in, A (8) 285.
of clays, and mixing and preparation, A (5) 193.
of corundum abrasives with ceramic bond, effect of hardness of disk, A (5) 169.
and crushing: laws of, review and current research on, A (2) 51; theory, B (8) 286.
disintegration methods and apparatus, A (10) 334.
and drilling, processes, A (10) 321.
of enamels: dry-process, effect on working properties, A (10) 324; factors in, A (5) 174.
finish boring of drilled holes, A (5) 169.
of flat glass, for surface working, I, A (1) 14, A (8) 275.
grindability of coal, methods for estimation, A (11) 362.
grinding cracks in hardened and ground tool steels, cause and prevention, A (3) 91, A (4) 127.
grindstones, profiling of, P (2) 52.
grits for, A (8) 267.
of hardened steel surfaces, A (3) 92; of manganese steel, A (1) 1.
of metallic polished sections, heat measurements, A (10) 321.
of metals, B (1) 2–3.
of microscopic specimens on lead disk with fixed abrasive, A (5) 169.
multiple use of pebble and ball mills, A (10) 335.
optical, theorems on mechanical surfacing, A (4) 127.
pan, relation between revolutions of runners and pan diameter, A (8) 285.
**Grinding** (*continued*)
of plane surfaces, limits of accuracy, A (2) 51.
and polishing, aluminum, A (3) 91–92.
bodies for, manufacture, P (6) 208–209.
of glass, surface changes, A (9) 302, A (10) 321.
helical grooves, P (8) 268.
as modern surface treatment, A (8) 267.
pneumatic tools for, P (2) 52.
of sprocket teeth, P (11) 346.
of synthetic materials, A (5) 169.
precision, application, A (1) 1; precision operations for large roller bearings, A (10) 321.
rapid, for new and damaged carbide tools, A (2) 51.
relation of ball wear to power in, A (1) 30.
of screw threads in shouldered work, P (1) 3.
simplifying conversion of revolutions per minute into surface speeds, A (1) 2.
snagging and billet type, cost, A (1) 2.
"spotty hardness" and "hairline seams," cause, A (1) 2.
of stainless steels: and finishing method A (3) 91; and polishing and buffing methods, A (6) 207.
wet closed-circuit system, circulating load in, A (11) 359–60.
**Grinding apparatus.** See also *Abrasive apparatus; Abrasives; Buffing apparatus; Crushing apparatus; Honing apparatus; Lapping apparatus; Mills; Polishing apparatus.*
or abrading machines, P (7) 241, P (11) 346; abrading disks applied to, P (11) 346; see also *Abrasive apparatus.*
and abrasives, grades and kinds, A (11) 345.
adjusting devices for, P (10) 322.
angle grinding spindle, P (7) 241.
automatic, P (7) 241.
bench machines and supporting work piece, P (11) 346.
British roll-grinding machines, A (6) 207.
burnishing rollers for cylindrical work, A (7) 239.
for cam grinding, P (1) 3, P (2) 52, P (5) 170, P (8) 268; automatic, P (7) 241.
for centerless grinding, P (1) 3, P (6) 208.
for chaser grinding, P (2) 52.
chrome steel *vs.* chilled iron crushing rolls, A (7) 258.
Churchill precision grinding types, A (6) 207.
for circular and noncircular pieces, P (8) 268.
cleaning and polishing block, P (5) 170.
closed-circuiting of, A (9) 310.
for clutch facings, P (9) 296.
for constant cutting speed in turning lathes, P (2) 51.
for correction of screw threads and other helical surfaces, P (9) 296.
cutter sharpening machine, P (5) 170; cutter type, P (4) 128.
cutting-off wheel, P (9) 296.
cutting tools with cemented carbide, use, A (9) 295.
for cylinder surfacing, P (8) 268.
cylindrical, stop mechanism for, P (1) 4.
for cylindrical objects, P (3) 92, P (8) 268; for cylindrical and external surfaces, P (7) 241.
for dental work, P (5) 170.
disk type (disks), P (3) 92.
bonds for pressed and slip-cast, A (3) 91.
diamond, control of granulation, A (11) 345.
for machining flat surfaces, A (2) 51.
for plane and cylindrical surfaces, A (10) 321.
small kiln for, A (10) 337.
dressing apparatus, P (6) 208; for dressing grinding disks, P (6) 209; for dressing grinding wheels with shouldered profile, P (5) 170.
for drill grinding, P (1) 3, P (8) 268.
duplex high-speed machine for foundries, A (6) 207.
with eccentrically driven grindstone, P (8) 268.
for filing, hand tools, P (8) 268.
for finishing, drilling, and grinding process, A (11) 321.
for finishing brake shoes, method for, P (7) 242.
for finishing surfaces of gear teeth, P (5) 170.
flat grinding mechanism for carding machines, P (6) 208.
with fluid-tight joint, A (11) 361.
for flutes, P (8) 268.
**Grinding apparatus** (*continued*)
grinders, P (10) 322.
attachment for, P (1) 3.
automatic line bearing, P (3) 92.
circular relief, P (7) 241.
crankshaft, P (11) 346.
cutter, P (8) 268.
cylinder, P (10) 322, P (11) 346.
drill, P (5) 170.
for lawn mower, P (7) 241; for rails, P (3) 93; for slicer blades, P (1) 3.
roll-type, for cold rolling mills, A (6) 207.
surface-type, P (1) 4.
tool, P (10) 322.
universal brake shoe guide, P (3) 93.
for grinding: cam shafts, P (6) 208; crank pins, P (6) 208; driving axle journals, A (1) 1; gears, P (2) 52, P (6) 208; tools, P (2) 52; valves, P (11) 347.
honing, or polishing razor blades, P (1) 3.
noncircular shapes, P (1) 3.
or polishing glass surfaces, P (1) 17; polishing, or cleaning wire, P (10) 322.
and scraping, A (3) 92.
and sharpening broaches, P (6) 208; razor blades, P (10) 322.
grinding cracks, cause and prevention, A (3) 91, A (4) 127.
grinding rings from emery and raw rubber medium, P (4) 128.
headstock, P (6) 208.
hydraulic wheel feed, P (7) 241.
knife-grinding attachment, P (11) 346.
for knives and scissors, P (6) 208.
for laminated articles, P (8) 268.
and lapping apparatus, P (10) 322.
at Leipzig Spring Fair, A (3) 91, A (10) 321.
for lens grinding, P (7) 241.
machine tool, P (4) 128; machine tool for grinding and cutting metal, P (5) 170.
maintenance and repairs, A (7) 258.
for meat grinders, P (2) 52.
and method for, P (1) 4.
and method of generating or correcting screw threads, P (1) 3.
oilstones, data, A (11) 345.
patent designs, P (1) 3–4, P (2) 52, P (3) 92–93, P (4) 128, P (5) 169–71, P (6) 208–209, P (7) 240–42, P (8) 268–69, P (9) 295–96, P (10) 321–22, P (11) 346–47, P (11) 361.
and polishing apparatus, automatic, P (4) 128.
and burnishing of wire, rods, bars, P (8) 268.
dust confiner and collector for, P (6) 208.
for lens, P (3) 92.
for level surfaces, mirror glass, P (10) 322.
patent designs, P (1) 3, P (2) 52, P (6) 208.
wheels, balancing device for, P (1) 3.
portable, P (3) 93, P (8) 268, P (10) 322; for surface grinding, P (5) 171.
precision type, P (2) 52, P (8) 268; description, A (3) 92.
for producing or grinding hobs, P (1) 3.
profile disks, profiling and dressing, P (10) 322.
and pulverizers, efficient types, A (7) 258.
for razor stropping, P (11) 347.
for reamers, P (1) 3.
for removal of steam from grinders, P (1) 3.
for roll grinding, P (3) 93, P (4) 128, P (5) 171, P (7) 242.
for screw threads, P (7) 241; for screw threads in chasers, P (4) 128.
for sharpening: blade, P (8) 268; drill, P (5) 170; knives, P (10) 322; knives, scissors, etc., P (4) 128; saw, P (1) 4; scalloped blades, P (4) 128; shears, P (6) 209; skate, P (8) 269; tools, P (11) 347.
spindle bearing, self-adjusting, P (11) 347.
stellite rollers for cylindrical work, A (7) 239.
stop mechanism, electric and automatic, P (7) 241.
table reciprocating mechanism, P (8) 268.
for terra cotta, P (9) 309.
terrazzo grinding angle spindle, P (3) 93.
tool carriers for boring, grinding, etc., P (5) 171.
track grinder, P (8) 269.
for turning and polishing cylinders of printing machines, P (2) 52.
two-slide automatic, P (1) 4.
valve grinder, P (2) 52; for valve grinding, P (6) 209, P (8) 269, P (10) 322.
wheels: abrasive composition, P (11) 346; for foundry use, A (1) 1.
balancing method and apparatus, P (11) 346.

**Grinding apparatus,** wheels (*continued*)
cement *vs.* glue as bond for, A (9) 295.
for cutting hard substances, P (9) 295.
diamond, for cemented carbides, A (7) 239.
diamond grains and reacted resinoid bond for, P (1) 3.
dressing process for grindstones, A (3) 92.
dressing unit, P (11) 346.
effect of different clays on physical properties, A (2) 51.
for grinding screw threads, profiling and dressing, P (2) 52.
history and use, A (3) 92.
method of forming, P (1) 3; process for, P (10) 321–22; production, A (8) 267.
molded body, P (9) 296.
mounted, P (2) 52; mounting, P (5) 170.
patent designs on, P (1) 3, P (2) 52, P (3) 92, P (4) 128, P (5) 170, P (6) 208, P (8) 268, P (10) 322.
positioning mechanism for, P (1) 4, P (2) 52.
reciprocating mechanism, P (11) 346.
recommendation chart, A (9) 295.
rubber-bonded, for edging axe blades, A (10) 321.
safety methods for, A (3) 92.
segmental, P (3) 93, P (8) 269.
silicon carbide, for glass grinding and cutting, A (2) 63.
silicon-carbide scrap, refractories uses, A (11) 346.
simplifying conversion of revolutions per minute into surface speeds, A (1) 2.
spindles of, friction driving mechanism for, P (2) 52.
structure, P (2) 52.
synthetic-bonded, for foundries, A (6) 207.
truing apparatus, P (2) 52, P (3) 93; truing device, P (11) 346.
uses: manufacture, II; theory, III; selection, IV; wheel shapes and sizes, V; special types, VI; segmental, disk, and mounted, VII; truing and dressing tools, VIII; use of dressing tools, IX; tool and cutter sharpening, X, A (1) 1.
for wire, P (10) 322.
work-clamping mechanism, P (6) 208.
work-loading and driving mechanism, P (9) 296.
**Grisaille glass,** history, A (11) 347.
**Grog** for refractories, effect of density in relation to its granulometric composition, A (6) 221.
**Grog brick.** See *Refractories, grog brick.*
**Grün-Kuntze diagram** for tests on high-grade cements, A (3) 95.
**Günther-schultze method** of silver diffusion in glass, A (3) 99.
**Gypsum.** See also *Mortars,* and cross-references.
anhydrite, celestine, and strontianite in Great Britain, B (11) 364.
calcining process for cementitious material, P (3) 95.
composition, P (5) 173; use and production figures, A (4) 131.
fine grinding of, effect on quality of cast gypsum ware, A (3) 95.
hydraulic cement material, process for, P (4) 133.
in Ky., occurrence, A (5) 197.
mining and crushing of, methods and costs, B (3) 95.
urea addition in, P (9) 299.
**Gypsum sponge** from anhydrite, process for obtaining, A (1) 6.

**Haban pottery** in Czechoslovakia, A (5) 171.
**Hagendorf feldspar,** preparation, A (1) 39.
**Haglund process** for obtaining corundum in shaft furnace through aluminum sulfide, A (2) 73.
**Hahn emanation method** for hydration of MgO, A (11) 347; principle, application, and procedure, I, A (11) 365–66.
**Halberstadt method** of silver diffusion in glass, A (3) 99.
**Haldane gas apparatus** for gas analysis, B (11) 361.
**Halite,** occurrence, A (4) 158.
**Halloysite** and china clay, expansion-contraction curves for, A (4) 158.
and montmorillonite, chemical studies on, I–II, A (11) 363.
**"Halo" formation** in glass, studies, A (1) 10.
**Halogens** in transparent glass, data, A (2) 63.
**Hamburg enamel school,** history, A (9) 303.
**Hardgrove method** and A. S. T. M. method for determining grindability, A (9) 310.
**Hardness** of abrasives, wear test method for, A (1) 2.
scratch hardness methods, types, A (1) 1.
tear resistance of grinding-wheel bonds, effect of clays on, A (2) 51.
in water, direct titration determination, A (4) 160.
*vs.* wear resistance, relation of, A (1) 2.
**Harmotome** (monoclinic zeolite), chemical and X-ray study of, A (9) 313.
**Haskelite system** for applying enamel to architecture, A (2) 57.
**Hatch impingers** *vs.* Greenburg-Smith type, comparative tests with, A (9) 309.
**Heat,** apparent specific heat of gas, application to flame temperature calculation, A (3) 112.
waste, specific data on recuperation of, A (5) 189.
**Heat capacity,** isobaric, of gaseous propane, *n*-butane, isobutane, and *n*-pentane, XX, A (5) 195–96.
**Heat conduction,** equation for, A (7) 264.
**Heat control** for enamel production, A (6) 213.
**Heat flow,** nonstationary, calculation of, A (9) 312.
**Heat of fusion,** latent, tests on, A (5) 200.
**Heat losses** in boiler furnaces, A (6) 236; in furnaces, calculation, A (11) 362.
**Heat process** for treating materials, P (2) 80.
**Heat transfer,** counterflow *vs.* parallel flow, A (7) 259.
through gases, liquids, and solids, literature review, A (2) 81.
**Heat transmission,** fundamental problems in, A (6) 221–22.
by radiation, equation for, A (10) 336.
value of, and heat capacity, studies on, A (6) 228.
through walls, Fletton brick studies, II, A (10) 330.
**Heat values** of fuels: effect of coal storage on, A (6) 228; errors in calculation, A (6) 228.
**Heating,** internal electric, sulfur boiling-point apparatus for, A (1) 31.
**Heating apparatus,** heater closures, A (6) 225.
heaters, cracking, refractories for, and use of, A (6) 221.
heaters, glass piping installations of small diameter, A (5) 176.
**Heating elements,** aluminum sprayed on glass for, A (1) 15; Schoop method for, A (4) 137.
electric, P (10) 337; for high-temperature work, A (4) 153–54; immersion-type, for vitreous enamel industry, A (1) 32–33; life of resistance wires for, A (8) 284.
for electric furnace, A (1) 28.
and glass with thin aluminum deposits for, A (1) 15, A (4) 137.
iron-chromium-aluminum, electrical resistance change for temperatures up to 1300°C, A (1) 27.
Silit and Globar types, silicon carbide in, A (1) 20.
**Heating unit,** Calrod, for tile mold, A (3) 109.
**Heatproof china bowls** in kitchen mixers, A (10) 332.
**Helium,** passage of, at ordinary temperatures, through glasses, crystals, and organic materials, A (1) 44.
**Hellige wedge pehameter** for *p*H measurements, A (8) 283.
**Hellmut and Fischer method** for heavy metals in silicate rocks, A (5) 199.
**Herapath, W. H.,** discoverer of dichroism and birefringence of quinine iodosulfate, A (2) 87.
**"Hetan" glass.** See *Glass.*
**Heterogeneous systems,** physical constants of calculations of: dielectric constants and conductivities of polycrystals of irregular systems, II, A (4) 160.
**High-frequency technique,** literature review, A (11) 365.
**High-pressure apparatus,** steam *vs.* electric drives, A (6) 224.
**High-temperature apparatus** for industrial laboratories, types, A (4) 151.
**Hilger medium quartz spectrograph** for ultraviolet light transmission of sheet glass, A (11) 351–52.
**Hiller-Müller method** *vs.* Bayer method for production of aluminum compounds, A (9) 313.
**Hirschwald method** for scratch hardness, A (1) 1.
**Holmegaard plant** for Danish glass production, A (7) 247.
**Honing** of cylinder bores, A (1) 1; methods of, P (4) 128.
**Honing apparatus.** See also *Grinding apparatus,* and cross-references.
adjusting means for, P (7) 241.
blind-end cylinder, P (5) 170.
for conical surfaces, P (3) 92; for gears and for truing honing means, P (3) 93; for lawn mowers, P (8) 269; for razor blades, P (11) 346.
and lapping apparatus, P (2) 52.
patent designs, P (4) 128, P (5) 170, P (6) 208, P (7) 241, P (10) 322, P (11) 346.
resurfaceable type, P (6) 209.
use, P (3) 92.
**"Hourdis" brick,** drying difficulties of, A (7) 257.
**Housing.** See *Architecture; Building materials,* and cross-references.
**Hultgen electron furnace** for temperatures to 4500°C, A (6) 225.
**Hulubei, Horia,** discoverer of madavium, element No. 87, A (4) 161.
**Humic acid** and humates, potentiometric study of formation, II, A (8) 290.
**Humidity,** apparatus for maintaining constant humidity, A (5) 192.
of clay and ceramic bodies, "Owep" apparatus for, A (1) 29.
humidity chamber and constant temperature test for glass properties, A (9) 302.
**Humidostat,** vapor-pressure, and thermostat, A (4) 153.
**Hüttig's formula** for permutites, validity, A (2) 84.
**Hydrated oxide** of iron for pigments, production, P (11) 367.
**Hydraulic refractory bodies,** production, A (6) 222.
**Hydraulic tests** for slags, A (3) 95.
**Hydraulic theory** of furnaces, A (6) 228.
**Hydride process,** titanium silicides, III, A (11) 345–46.
**Hydrocarbon research,** thermodynamic data in, A (5) 196, A (8) 287.
**Hydrocarbon systems,** phase equilibrium in: thermodynamic properties of isobutane, XXI, A (10) 337.
**Hydroelectric power** of Columbia River, Northwest minerals for, B (6) 238.
effect on coal industry, A (7) 266.
**Hydro-Filter spray booth,** A (6) 213.
**Hydrofluoric acid,** production of, A (3) 99.
**Hydrogen** and carbon, microchemical test for, A (5) 201.
**Hydrogen-carbon ratio** of coal, relation with volatile matter, A (10) 337.
**Hydrogen-ion concentration,** effect on adsorption of hemoglobin by kaolin, A (3) 118.
Hellige wedge pehameter for measuring, A (8) 283.
**Hydrogen-ion control** for stiff-mud clay improvement, A (10) 329.
**Hydrogen-ion determination** of liquids and semiplastic solids, simplified quinhydrone electrode for, A (10) 335.
**Hydrogen peroxide treatment** for exchange capacity tests on Md. soils, A (1) 37.
**Hydrogenation** of coal, B (3) 114; forms of sulfur in insoluble residues of, A (10) 336; U. S. Bur. Mines experimental plant for, A (5) 195.
for primary liquefaction of coal, A (1) 34; primary liquefaction by destructive hydrogenation of oxygen, nitrogen, and sulfur linkages, A (5) 195.
**Hydrometers** for etching process control, A (5) 175.
sensitive, for determining small amounts of clays and colloids in soils, A (1) 30; accuracy of, A (2) 78, A (8) 285.
**Hydromuscovite** associated with gold, paragenesis of, A (9) 314.
**Hydrosilicate of nickel,** X-ray studies on, A (6) 235.
**Hydrothermal synthesis** of kaolin, A (7) 261–62.
**Hydrous borate minerals,** treatment of, P (1) 45.
**Hydroxides** and oxyhydrates, studies on, B (6) 235.
**Hygroscopic properties** of ceramic bodies, A (2) 89.

**I.C.I. and Boliden processes** for sulfur removal from combustion gases, A (3) 113.
**I. G. Alkazid and I. G. Claus processes** for gas purification and sulfur extraction, A (9) 316.
**Ignition apparatus,** for closed-system fluent-combustible burners, P (2) 80.
**"Illite,"** proposed name for "sericite-like" material, A (4) 157.

**Illumination.** See also *Glass, lamps; Glass for lighting; Light; Lighting.*
incandescent lamp for microscopes, A (4) 150.
manufacture of glass for, P (8) 278.
mat glass illuminating properties, A (7) 248.
portable photoelectric illumination meter, A (8) 285.
**Ilmenite** in Espiritu Santo, B (2) 83–84.
**"Imbibition bottle" apparatus** for bentonite tests, A (4) 155.
**Impingers.** See *Dust apparatus.*
**India,** ceramic industry in, A (10) 343; geological history of Hyderabad State, B (10) 341; mineral production in, for 1935, A (6) 230.
**Indicator solutions,** Hellige wedge pehameter for $p_H$ readings, A (8) 283.
**Indicators,** arsanilic acid as reagent for cerium detection, A (8) 291.
tetrahydroxyquinone for, in direct titration, A (10) 342.
**Indium,** occurrence, recovery, and uses, A (10) 339.
**Industrial diseases.** See *Diseases; Dusts; Safety; Silicosis.*
**Infra-red spectra** of iron, titanium, and carbon, A (4) 162.
**Inhibitors.** See also *Pickling.*
function, A (4) 136.
for pickling: data, A (11) 348; use and effect, A (2) 58.
theory of action of, and new method of inhibitor evaluation, A (4) 136.
types of, and trade names for, A (4) 136.
**Insulating materials.** See also *Glass, wool,* and cross-references; *Insulation; Insulators; Porcelain, electrical;* and insulating types of refractories under *Refractories.*
acoustical, P (7) 249.
for arc furnaces, Thermalite and diatomite brick, A (5) 195.
for atmospheric furnaces, A (7) 245.
calcined silicic acid for, A (7) 248.
ceramic body, use and properties, A (2) 76.
Corundite, Wyolite, and Armstrong brick for atmospheric furnaces, A (7) 245.
diatomaceous, thermal conductivity tests on, A (5) 188.
glass, electrical properties of solid dielectric materials, A (2) 65.
fiber, A (5) 178; composition and production, P (8) 277; properties, A (9) 304; for electric apparatus, A (8) 273, A (9) 303–304; see also *Glass, fiber.*
ground glass mixture for heat insulation, P (7) 250.
for heat insulation, P (9) 306.
and porcelain, data, B (10) 333.
silk: data, A (2) 63; properties, A (2) 63; types, A (9) 303.
spun: for heat and sound insulation, P (7) 250; properties and use, A (9) 304–305; for railway equipment, A (1) 14.
tapes, A (11) 350.
Thermolux, value of, A (9) 303.
for high frequency, constitution and properties, A (2) 76, A (6) 223.
high-tension technology of, A (6) 223.
magnesium-aluminum-silicate bodies (cordierite), A (6) 224.
mineral wool, P (6) 219.
composition for, P (7) 251.
field survey in 1935, B (6) 217.
process, P (10); 328; process and apparatus for production, P (5) 194, P (7) 251, process and furnace for, P (10) 328.
or rock wool, bond for, P (11) 352.
molded, production, A (9) 309.
organic and inorganic, lectures on, B (4) 148.
porous, production, P (1) 48.
rock wool: in Can., A (11) 351; process, P (10) 328, use and properties, A (2) 65; spun rock wool, A (8) 275; see also *Glass, fiber.*
rock wool blow chamber, P (11) 352.
solid electric, breakdown field strength of, in frequency range between 1 and 15 megacycles, A (3) 99.
sound-absorbing and heat-insulating unit, P (6) 220.
for spark plugs, heat-resistant, P (5) 191.
tests of National Physical Lab., A (8) 293.
tests and properties of, A (4) 145, A (8) 281.
thermal insulating unit, P (7) 250.
vacuum-tight joints between metallic and insulating bodies, P (2) 77.
vermiculite for muffler, P (2) 90.
from zonolite, A (4) 157.
**Insulation.** See also *Refractories, insulating.*
aggregates, types of, A (4) 144–45.
electrical, ceramic masses for, P (10) 333.
fiber glass for electrical apparatus, A (8) 273, A (9) 303–304; see also *Insulating materials, glass, fiber.*
heat- and sound-insulating materials, P (4) 146, P (8) 279.
heat conservation in furnaces by use of, A (4) 143.
refractory heat loss based on heat capacity, reanalysis of, A (4) 143.
research on, progress in, A (4) 152.
sound, diatomite for, A (3) 116.
thermal, of arc furnaces, effect on current consumption, A (5) 195.
thermal, celite type, high-temperature apparatus for, A (4) 149.
**Insulators.** See also *Porcelain.*
ceramic composition, P (10) 333; for condensers, A (10) 332; porous, method of making, P (5) 191.
electric bushing, condenser type, P (2) 77.
electrical, pyrophyllite in, A (10) 333.
flux-distributing type, P (11) 359.
glass, P (8) 278; Corning Glass Works, P (6) 218; for electrical use, P (3) 102; tempered, P (6) 218.
high-tension, studies on, A (6) 223.
ignition plug, manufacture of, P (11) 359.
low-voltage, development of, A (6) 224.
patent on, P (3) 109.
porcelain: composition and tests for, A (8) 283; drying and roughing, difficulties, A (8) 283; Schoop method for plating, A (3) 109.
for spark plugs: ceramic bodies for, P (5) 191, P (6) 224; recrystallized alumina with crystalline aluminate for, P (9) 309; patents, P (1) 27, P (7) 257, P (9) 309.
strain-type, patent on, P (1) 27.
**International chemistry meetings,** A (10) 344.
**International Glass Congress,** A (11) 351.
**Inyoite,** heat of hydration and exothermal transformation for, A (9) 316.
**Iporite process** for foamy concrete, compared with other building materials, A (5) 184.
**Iron.** See also *Metals.*
colorimetric determination with salicylic acid, A (10) 342.
iron–Be, compounds of, A (2) 87.
iron–cobalt, studies on, A (1) 8–9.
iron–cobalt–cobalt silicide–iron silicide, thermal and micrographic methods for study, A (3) 97.
iron–cobalt–copper, studies on, A (5) 175.
iron–Mn–Si–O, equilibrium studies on, A (6) 233.
melts, iron-manganese silicates and solid silica, effect of impurities on reactions between, A (6) 233.
new wave-lengths in arc spectra of, A (4) 162.
in ores, spectrophotometric method for, A (8) 292.
oxide films on, thickness measurements on, A (6) 234.
in sands and glass, determination of, A (1) 43.
and steel, X-ray tests for, A (11) 366.
**Iron compounds,** production, P (11) 367.
**Iron hydroxide,** colloidal, adsorption on quartz, I, A (10) 341–42.
**Iron oxide** in glass, color and light transmission tests on effect of, IV, A (2) 63; dissociation studies, XIII, A (4) 138; in glass melts, removal, P (7) 251.
reduction by carbon monoxide in presence of natural impurities, A (7) 260.
titrimetric method for analysis of, A (1) 11.
**"Iron-rhodonite"** (from slag) and pyroxmangite, data, A (1) 37.
**Isograph,** mechanical root-finder, A (4) 150; mechanism of, A (4) 151.
**Isolite,** thermal conductivity of, relative comparison method for, A (1) 15.
**Isomorphism** of apatite group, structural investigation of, A (5) 198.
and oversaturation, X-ray analysis of crystals, A (5) 200.
**Isothermal creep tests** of stabilized fibers of soda-lime-silica, A (8) 273; Stott data on unstabilized glass, A (9) 303.
**Italy,** high-grade refractory aluminous materials in, A (8) 280; silica and alumina raw materials in, A (8) 281.

**Jablonec glassware** of Czechoslovakia, B (7) 244.
**Jaeger maximum bubble pressure method** for surface tension of molten glass, A (8) 275.
**"Jargal,"** commercial production, A (11) 354.
**Jointing materials.** See also *Bonds (binders); Cements, jointing.*
**Jointing materials** (*continued*)
for ceramic to metallic bodies, P (2) 80, P (5) 204, P (7) 249.
ceramic ware and metals, alloy composition, P (5) 191–92.
ground-glass joints, limitations, A (3) 99; sliding ground-glass joint, A (3) 100.
for metal and glass, production, A (3) 99.
for pavements, laboratory research on filler materials for brick roads, A (4) 142.
plasticized sulfur for clay products, A (1) 18.
for sleeve joints of pipes, A (5) 193.
vacuum-tight, between metallic and insulating bodies, P (2) 77.
**"Jomon-Doki" earthenware,** prehistoric, III, A (2) 53.
**Jones sample splitter,** improved type, A (4) 152.

**Kaiser and Lumière methods** for silvering glass, A (1) 13.
**Kallauner-Matějka method:** for alumina separation during rational analysis, A (1) 44; simplified, for chemical analysis of refractory clays, A (10) 342.
**Kanthal alloys.** See *Alloys.*
**Kaolinite** and anauxite: clay type, structural formula for, A (8) 290; structural relation of, A (5) 198.
and böhmite in bauxite, A (3) 119.
solution deposits of, in Mo., A (4) 157.
from spodumene, alteration of, A (1) 35.
**Kaolins.** See also *Clays.*
adsorption of hemoglobin by, effect of $p_H$ concentration on, A (3) 118; effect of salts on, A (6) 232.
and anauxites, densities and structural relationships of, A (4) 156.
and clays, white-firing Schletta pitchstone type, A (11) 364.
concentration of, apparatus for, P (8) 286.
dehydration and transformation, A (2) 85.
formation of, and silicification phenomena, A (1) 36.
hydrothermal synthesis of, A (7) 261–62.
and kaolin-quartz mixtures, ultimate strength of, A (5) 186.
paper clays, substitution of, A (2) 83.
plasticity of, tests on, A (3) 123.
for porcelain manufacture in Germany, II, A (3) 109.
sources of: and feldspar deposits in Europe, data on, A (5) 197; in N. C., B (4) 159; sedimentary, of Ga., geologic and technologic aspects, A (1) 36–37.
synthesis experiments, A (1) 36.
transformation during heating, A (7) 262–63.
**Karcite** for laboratory equipment, new ceramic material, A (4) 165.
**Keenan-Keyes steam tables,** psychrometric properties of air-vapor mixtures, A (6) 226.
**"Kemite,"** artificial cordierite, production o A (11) 358.
**Kernite** for borax and boric acid production, A (1) 35.
and borax in Calif., A (10) 340.
**Kieselguhr.** See *Diatomite.*
**Kilns.** See also *Firing; Furnaces,* and cross-references.
annular: and automatic stoker for firing brick, A (11) 362; thermotechnical notes on, A (7) 260; excess air in fuel combustion in, A (7) 259.
automatic shaft, firing Portland cement, A (8) 271.
batch, firing procedure for, A (11) 362.
beehive, design and operation, II–III, A (7) 259.
cement: automatic shaft, theory of firing in, A (8) 271; blast-type, evolution of, A (2) 55.
for ceramic material, P (1) 34; developments in construction of, A (1) 34.
circular: artificial cooling of, A (4) 153; brick, charging green brick in, A (4) 153.
continuous, P (2) 81; air expansion in, A (8) 286.
decorating, continuous, application of recirculating gas-tube firing system to, A (1) 32.
design and firing: Scotch downdraft and beehive types, modern practice in, I, A (5) 195; beehive and rectangular downdraft types, II–III, A (7) 259; downdraft kilns, setting, firing, and cooling and fuel consumption, IV, A (8) 287; Richardson suspended arch, Hoffman, and French Hoffman types, discussion, V, A (10) 336.
downdraft, and gas-producing and smoke-consuming firebox, P (3) 114.

**Kilns,** downdraft (*continued*)
periodic, round or rectangular types, A (7) 260.
rectangular, design and operation of, II–III, A (7) 259.
round, stoker firing of, A (7) 260.
Scotch and beehive types, data, A (5) 195.
setting of brick and tile in, firing data, IV, A (8) 287.
electric, *vs.* beehive and gas-fired tunnel, cost comparison, A (11) 362.
firing of, A (2) 80–81.
for firing electrical porcelain, data, A (1) 34.
rotary, for firing decorated pottery, A (4) 154.
use of powdered (waste) glass in, A (6) 237.
firing costs and use of kiln space, effect of sagger size on, A (1) 33.
gas-fired, for sanitary ware, A (4) 147.
high-temperature laboratory type, A (1) 33.
Hoffman and French Hoffman types, discussion, V, A (10) 336; Hoffman, mechanism for unloading brick from, A (1) 33.
intermittent, combustion efficiency, A (8) 286–87.
kiln furniture, P (8) 287.
Lenox, gas decorating, A (3) 113.
muffle *vs.* open flame firing, I, A (11) 362.
new, drying before use, A (7) 260.
patent design on, P (7) 261.
pottery, Roman type discovered in England, A (7) 260.
Richardson suspended arch, data on, V, A (10) 336.
rotary cement, refractories for, A (5) 188.
small, for grinding disks, A (10) 337.
tabular dimensions for various capacities, A (8) 286.
tile for, P (1) 34.
tunnel, Bricesco type, A (3) 112.
for ceramic products, P (6) 229; for firing ceramic ware, P (10) 338.
electric heating in, P (9) 312.
for heavy clay industry, history and data, A (10) 337.
Lengersdorff, for short firing schedules, A (3) 112–13.
multi-tunnel kiln, operation of, A (8) 287.
patent designs, P (1) 35, P (11) 363.
for refractory brick, A (1) 34.
for structural materials, A (1) 34.
zigzag: technical analysis, A (5) 196; for tile production, A (7) 260.
**Kinetic friction,** measurements of, between highly polished surfaces, I, A (7) 240.
**Kinetics** of adsorption, gases by glass walls, XIV, A (2) 59.
of carbonation processes of lime-sand autoclaved materials, A (1) 17.
of glass coloring by X-rays, A (1) 12.
**Kipp gas-producing apparatus** for glass production, A (9) 305.
**Kjeldahl glass,** arsenic-free type, A (2) 64.
**Knopf method** for quartz determination in dusts, A (10) 342.
**Kodachrome processes** for color photography, A (6) 224.
**Kolthoff method,** modified, for magnesium-oxide determination in limestone, A (9) 315–16.
**Konimeter,** circular-type, for sampling dust, B (7) 258.
**Kovar metal** for metal-glass seals, A (6) 214.
**Krupp hard metal,** Widia, data on, A (6) 225.
**Kubelka-Munk theory** of reflectance measurements, A (1) 29.
**"Kunckel-Glass,"** history of, II, A (6) 215.
**Kunig-Martens spectrophotometer** for spectral absorption measurements, A (10) 326–27.
**Kyanite,** alkali content of, A (9) 307.
disseminated, analysis of, A (1) 36.
and kyanite-clay mixtures, expansion characteristics when heated, A (11) 354.
as modification of lazulite, A (1) 38.
production of, P (1) 24.
sources of: in Kola Peninsula, use in refractories, A (7) 262; in N. C., A (3) 116.
**Kyanite-amphibolites,** paragenesis of, A (1) 38–39.
**Kyanite-eclogites,** paragenesis of, A (1) 39.
**Kyanite ore,** treatment, P (3) 118.

**Laboratories.** See *Research and research laboratories.*
**Labouret,** stained glass work of, A (1) 4.
**Labscope,** portable polarizing strain tester, A (8) 283.
**Laccolite** in North Caucasus, A (7) 261.
**Ladles,** fireclay ladle sleeves, Bur. Standards studies on, A (6) 221.
high-grog refractory for steel casting, A (6) 222.
refractories for, improvements in, A (4) 144.
**Laminated glass.** See *Glass, laminated; Glass, safety.*
**Lamps.** See also *Glass, lamps; Glass for lighting; Illumination.*
electric, patent design for, P (10) 327.
electric discharge, with metal vapors, vitreous composition for, P (8) 272.
mercury lighting, Glassteel diffuser for, A (9) 300.
**Land, E. A.,** technical light-polarizing material manufactured by, A (2) 87.
**Langbeinite,** flotation of, from potash field of N. Mex. and Tex., B (4) 159.
**Lanthanum,** X-ray spectrographic determination of, in presence of other rare earths, A (7) 264.
**Lapping** of toothed gears, P (6) 208.
**Lapping apparatus.** See also *Grinding apparatus; Honing apparatus.*
cam, footstock for, P (7) 241.
for disk faces of valves, P (6) 209.
gear-type, P (5) 170.
hydraulic, P (1) 3.
method of use, P (1) 4.
patent designs, P (1) 3, P (2) 92, P (5) 170, P (9) 296.
**Lapis lazuli** in Calif., A (5) 196.
**Laterite,** formation, A (1) 36.
**Latex,** binder for ceramic ware, P (9) 319.
**Laue and rotating crystal methods** for $Na_2(B_2O_5)$ crystal structure, A (9) 315.
**Law of motion** of particles in a fluid, A (8) 284.
**Lazulite,** mineral, types of deposit, A (1) 38.
**Lead** in blood, quantitative spectroscopic determination, A (3) 120.
and cadmium in zinc ores, separation, P (7) 264–65.
determination of minute quantities, A (9) 316.
determination of, on water, A (5) 199–200.
white, production method for, P (7) 265.
**Lead borate,** production, P (3) 121.
**Lead oxide**–$B_2O_3$–$SiO_2$ for "soft" glazes, A (4) 130.
or suboxides of lead, process and apparatus for manufacture, P (2) 88.
**Leadless glazes.** See *Glazes.*
**Leadless majolica enamels.** See *Majolica.*
**Le Chatelier,** significance of work on mineralogy and petrography, A (1) 37.
**Le Chatelier densimeter** for density determinations, A (6) 224.
**Leers.** See also *Annealing; Furnaces, annealing.*
annealing, drift-control apparatus for, P (4) 140.
for annealing glass, P (1) 16, P (9) 301, P (9) 305; draft control for, P (7) 250.
leer loader, P (1) 16.
muffle, and direct-firing types, A (2) 64.
**Lees' method** for tests on polished metal surfaces, A (1) 2.
**Leightonite,** relation to polyhalite, A (5) 198.
sulfate of copper from Chile, A (5) 196–97.
**Leitz or Fuess (sigma) integration apparatus** for quantitative determination of clinker minerals, A (9) 299.
**Lengersdorff tunnel kilns** for short firing schedules, A (3) 112–13.
**Leucite** and pseudoleucite, studies on, A (1) 37.
**Leukometer** and Witte's method for surface measurement of powder, A (1) 31.
**Light.** See also *Glass, lamps; Glass for lighting; Lighting; Illumination.*
and color, device for measuring densities of, P (9) 298.
colored, for testing materials, A (1) 47.
daylight factor diagrams, construction of, A (4) 137.
dual character of, studies on, A (10) 342.
elliptically and circularly polarized, analysis of doubly refracting materials with, A (1) 41.
filtering of, Schott GG-3 colored glass for, A (6) 216.
in glasses, scattering theory of, A (11) 351.
light-scattering materials, optical specification of, A (1) 29.
in mat glasses, distribution curves for, A (7) 248.
polarized: apparatus for microscopic examination in, A (8) 283; technical applications, historical review, A (2) 87.
portable photoelectric daylight factor meter, A (10) 335.
transmission of, by disappearing filament pyrometer, A (4) 151.
**Lighting.** See also *Light,* and cross-references.
American recommended practice of school lighting, standards for, A (7) 246.
industrial, for color-matching work, A (3) 110.
**Lightning-stroke phenomena,** tests on, II, A (4) 147.
**Lignite,** reactivity of, for ceramic raw materials poor in iron, A (7) 262.
**Lime,** free-flowing dead-burned dolomitic lime for glass, A (4) 138.
in Portland cement, maximum amount of, A (4) 132.
quick and hydrated, technical properties of, A (1) 6.
quicklime, effect of calcining temperature of calcium carbonate on, A (2) 55.
silica in solutions of, colorimetric determination of, A (8) 291.
uncombined, in Portland cement, ethylene glycol method for determination of, A (5) 200.
**Lime-free magnesia,** manufacture of, P (8) 282.
**Lime-silica rock,** impregnation by Na silicate solutions, effect of, A (6) 219.
**Limestone,** dissociation temperature of, relation to content of clay matter or magnesia, A (6) 212.
MgO in, modified Kolthoff method for, A (9) 316–16.
in northwest, studies on, B (6) 238.
in Ore., B (1) 40.
**Lindemann-Winkler apparatus** for determining oxygen content of air, A (5) 200.
**"Lion" jewel,** enamel on, A (5) 171.
**Liptak furnace,** construction of, A (6) 220.
**Liquid agitation systems,** wall friction in, A (1) 31.
**Liquid films** between seized surfaces, A (1) 47.
viscous flow of, range of action of surface forces, II, A (7) 240.
**Liquid mixtures,** binary, molecular clustering of, A (3) 119–20.
**Liquid state** and theory of fusion: continuity between solid and liquid states, I; theory of fusion and crystallization, II, A (3) 119.
**Liquids,** Frenkel-Andrade and Waterton equations for, A (10) 327.
and gases, permeability of canal, skeleton, and network capillary systems in, XIX (*d*), A (9) 315.
and glass, structure of, X-ray tests on, A (2) 87, A (3) 101.
simplified quinhydrone electrode for $p_H$ determination, A (10) 335.
solid-bearing, filtration of, P (1) 32.
wetting characteristics, A (10) 335–36.
**Lithium** in glass and ceramics, A (11) 351.
minerals and compounds of, in ceramics, A (6) 233; properties and uses of, A (5) 197–98.
in New England, deposits of, A (10) 339.
**Lithium ions,** diffusion of, through quartz, in electric field, A (4) 161.
**Lithium-magnesium mica,** taeniolite, in Ark., properties of, A (5) 198.
**Lithium oxide**–$CO_2$–$SiO_2$, equilibria in, A (5) 202.
**Lorenz-Lorentz formula** for molecular refractions of glass, A (10) 326.
**Lubrication** (and lubricants) of ball and roller bearings, A (1) 29.
cutting fluids for metal cutting, A (4) 127.
"fluid" *vs.* "boundary," transition of, I, A (7) 240.
grease-lubricated artificial resin and metal bearings, comparative tests with, A (4) 149.
lubricating oil from coal products, research on, B (3) 114.
methods for, under pressure for brick machines, A (2) 78.
molecular theory of, A (6) 225.
nonspreading oils, A (4) 151.
oils for circulating systems of steam turbines, A (8) 284.
oils for metal cutting fluids, A (4) 127; classification and use, A (11) 343.
rock-drill, in quarry and mining service, A (4) 152.
temperature of lubricated surfaces, III, A (7) 240.
**Luminescence** and color in zinc borate glass, effect of radium on, A (6) 216; of glasses, studies on, A (7) 248; see also *Reflectance.*
**Luminescent material,** production, P (5) 203.
**Lumnite,** refractory concrete, composition of, A (9) 308.

**Lurgi process** for gasification of coal with oxygen under pressure, A (4) 154; use of industrial gases and waste gases by, A (8) 287.
**Lutes** for porcelain tubes, composition for, A (1) 30.

**Magnesia** in enamels, effect, A (11) 348.
fused, for refractories, A (7) 253.
as glass raw material, A (5) 179.
hydroelectric mining of, Columbia River power, B (6) 238.
lime-free, manufacture, P (8) 292.
manufacture of, P (8) 282.
in Portland cements, III–VII, A (5) 173.
**Magnesia–alumina–silica–alkalis,** electrical resistance, A (3) 108.
**Magnesian silicates** of asbestiform or lamellar habit not of antigorite group, A (9) 313.
**Magnesite,** crystalline, in eastern Alps, data, A (5) 196.
and magnesium compounds, Bur. Mines Rept., B (9) 315.
and magnesium oxide, concentrated methanol solution for analysis, A (10) 343.
and other magnesium compounds, B (3) 106.
as refractory, studies, B (4) 146.
sintered, sintering process, II, A (2) 74; process in magnesite containing unevenly distributed constituents, III, A (11) 356–57.
sources of: in Austria, mining and industry, A (10) 339.
in Calif., A (4) 155.
in Central Europe, deposits, A (7) 262.
of East Siberia, A (6) 230.
in India, data on, A (4) 157.
in Siberia, with dolomite, A (7) 262.
Ural Mt. deposits, A (5) 186.
**Magnesite ores,** low-grade, flotation concentration, B (11) 364.
**Magnesium,** beryllium, etc., apparatus for separation of, P (8) 292.
calcium, strontium, and barium, complex silicates of, preparation, composition, and behavior, A (8) 289.
discovery and developments, A (8) 288–89.
phosphate method for determination of, A (2) 86.
production of, P (5) 199; from magnesium oxides, P (2) 88; from magnesiferous raw materials by thermal reduction, P (3) 121.
separation of, as oxalate, method, A (8) 292.
**Magnesium borates,** heating curves of, A (9) 316.
**Magnesium metasilicate,** formation of, in thermal decomposition of talc, A (6) 232.
**Magnesium oxide** in acid-soluble slags, determination, A (4) 161.
and calcium carbonate in dolomitic material, process for removal, P (1) 45.
and calcium oxides, Richards method for determination of, A (1) 42.
from dolomitic rock, process for obtaining, P (8) 292.
for fused magnesia crucibles, A (8) 280.
hydration of, Hahn emanation method, A (11) 347.
in limestone, modified Kolthoff method for determining, A (9) 315–16.
–$SiO_2$ system, thermochemical studies on, A (2) 74.
production, P (10) 332.
sintered or fused, for refractory brick, P (11) 358.
**Magnesium oxychloride,** production of, P (3) 95, P (5) 173.
**Magnesium-silicate bodies,** optical test on, A (2) 51.
**Magnesium silicates** for insulation, studies on, A (6) 223.
iron removal in, P (6) 232.
for refractories, tests, A (1) 23.
**Magnesium sulfate** in clayware, elimination, A (3) 103.
**Magnesium titanates,** studies, A (6) 223.
**Magnesium-zinc spinels** from Ceylon, A (9) 313.
**Magnetic balance,** construction and operation, B (11) 365.
**Magnetic permeability** of iron and nickel alloys, A (6) 225.
**Magnetic properties** of dissociated mixtures with iron oxide, effect of silicic acid on, A (2) 85.
and electrical properties of MO–$Fe_2O_3$, A (3) 119.
of magnetite, effect of lattice discontinuities on, B (11) 365.
**Magnetic separation,** high-intensity, of industrial minerals, A (3) 110.
principles and equipment in, A (10) 335.
**Magnetic test** on binary systems MO–$Fe_2O_3$, A (3) 119.
re. X-ray shadow pictures for comparisons of nondestructive materials testing, A (11) 365.
**Magnetism,** theory of, A (4) 160.
**Magnetite,** magnetic properties of, effect of lattice discontinuities, B (11) 365.
metastable $\gamma$-$Fe_2O_3$ phase in transformation process, A (11) 363–64.
physical properties and use as industrial mineral, A (1) 21.
**Majolica,** Belgian, A (2) 53.
enamel, crazing and flaking of, A (1) 8.
Italian, early, A (9) 297; rare Italian, A (10) 323.
Slovak, characteristics of, A (5) 171.
underglaze, and overglaze colors, recipes, A (11) 347.
**Management.** See also *Safety.*
budget procedure for organized research programs, A (9) 318; variable budget, I–II, A (3) 123.
in clay plants, inspection and proper care of machinery, A (8) 284.
and control in enamel plants, I–II, A (6) 213; III–IV, A (11) 349.
cost of snagging and billet grinding, A (1) 2.
economic organization in ceramic industry, A (2) 88.
employee education outline at Servel, Inc., A (3) 122.
in glass industry, prevention of diseases and accidents, B (2) 90.
industrial operations, tables, graphs, and charts for, A (8) 293.
process for packing products, A (11) 367.
production statistics, importance, A (7) 265.
testing and rating prospective employees, A (7) 266.
training of unskilled labor, A (7) 266.
**Manganese** and magnesium, quantitative separation of, by o-hydroxyquinoline, A (9) 316–17.
and sulfur-containing clinkers, reducing firing, color changes, and strength in, A (4) 132.
trivalent and quadrivalent, studies, A (2) 87.
**Manganese dioxide,** manufacture of, P (9) 317.
**Manganese–oxide–**$Al_2O_3$–FeO, studies on, A (5) 202.
**Manganese titanate (meta-)**–CaO·MgO·$2SiO_2$, equilibrium diagram for, A (4) 161.
**Manometers,** oil, simplified, precision type, A (10) 335.
**Maps,** centennial geological map of Mich., B (4) 159.
**Marathon steels,** composition, properties, and use, A (2) 78.
**Marcus formula** for strength tests of window glass, A (11) 349.
**Marcy rod mill** for replacing classifier, A (8) 285.
**Margule's method** for determining viscosity of molten Siemens-Martin slag, A (1) 45.
**Martens method** for scratch hardness, A (1) 1.
**Martensite** and graphite for gray cast iron, effect on wear resistance, A (1) 29.
**Martin, R. W.,** history of Martin ware, B (3) 93.
**Masonry.** See also *Building materials,* and cross-references.
damp-proof courses, flexible and rigid types, B (1) 18.
dry masonry structure, P (2) 68.
metallurgical furnace type, P (5) 189–90.
permeability of masonry walls, Bur. Stand. tests on, A (8) 279.
unit-type, mortars for, A (1) 18, A (9) 316.
weatherproof joint, P (5) 191.
**Materials,** castings, and welds, technical X-ray irradiation tests for, A (1) 27.
**Materials tests,** X-ray, of coarse structure and endurance strength, A (11) 366–67.
**Matter,** elasticity, plasticity, and structure of, B (6) 235.
**Maurer, Edward,** cited on high-temperature tests on iron and steels, A (5) 193–94.
**Maximum bubble pressure (Jaeger) method** for surface tension of molten glass, A (8) 275.
**Maxwell formula,** Stefan radiation law, and Nernst heat theorem for radiation pressure, relation of, A (9) 312.
**Maya** and Peruvian ceramics, A (6) 210.
**Mazetti and Agostini method** ($SnCl_2$) for arsenic determination in steels and cast irons, A (4) 160.
**McLaughlin, M. L.,** plastic slip underglaze painting and one-fire porcelain artware of, A (7) 243.
**Measuring apparatus,** types, B (4) 153.
**Mechanics** and heat, physical data, B (6) 235.
**"Meco" electric shaker conveyer,** A (5) 193.
**Mellon Institute,** scientific contribution of, A (10) 343.
**Mellor, J. W.,** biography, A (8) 293, A (10) 344.
**Mellor formula** for stress measurement in ceramic bodies, A (8) 284–85.
**Mellor Laboratories** for clay research, A (6) 238.
**Melting** of glass or refractory minerals, revolving tube furnace for, P (8) 286.
**Melting point** of enamels, determination of, A (7) 245.
micromethod for determination of, A (5) 201.
of refractory oxides, tabular data, A (5) 187.
**Melting temperatures,** regulator for control of, P (9) 312.
**Mercuric thiocyanate method** for gravimetric determination of zinc, A (10) 342.
**Mercury lighting,** Glassteel diffuser for, A (9) 300.
**Mercury vapor,** high-frequency spectrum of, A (3) 118–19.
**Mercury volumeter** for after-contraction test on refractories, A (5) 185.
**Merwinite,** composition and use, A (4) 145.
**Meta-alite, $\beta$,** tests on, A (4) 160.
**Metal carbides.** See *Abrasives.*
**Metal ceramics** molded from powder, A (8) 293.
**Metal coatings** for ceramic bodies, P (8) 283, P (11) 361.
**Metal industry,** colored light for tests in, A (1) 47.
**Metal powders,** copper-lead bearings from, A (1) 28.
production and test methods for, A (11) 3[illegible] types and classification of, A (11) 360 [illegible].
**Metallic aluminum** for silicosis prevention, A (5) 204.
**Metallic films,** thin, electric conductivity of, use of cesium and potassium on Pyrex-brand glass, II, A (11) 350.
**Metallic orthogermanate** activated by rhenium for luminescent material, P (5) 203.
**Metallic oxides** for ceramic-ware coatings, P (11) 358.
**Metallic surfaces,** corrosion of, by impact of falling drops, A (9) 310.
**Metallic zinc,** zinc white production from, A (6) 231.
**Metallized enamel.** See *Enamels.*
**Metallizing** in pottery industry, A (10) 332.
**Metallography,** X-ray tests for research in, A (11) 367.
**Metallurgical drosses** and ores, tin determination in, A (4) 161.
**Metallurgy,** electron diffraction for research in, A (4) 161.
in the glass industry, I, A (1) 13.
powder, origin and application of, A (8) 293.
progress in, effect on clay industry, A (5) 193.
quantitative spectrochemical analysis in, A (8) 291.
**Metals.** See also *Cleaning of metals; Metals for enameling.*
alkaline-earth, preparation of, P (5) 202.
alloy steels: inclusions in, studies on, A (1) 9; thermocouple control of, A (2) 79; low, welding of, Comm. Rept. of, A (5) 174.
annual rept. of Metallurgical Div., B (5) 175.
barrel finishing of metal products: I; burnishing barrels for, II; metallic burnishing materials, III; soap for barrel burnishing process, IV; definition of barrel burnishing, V; questionnaire on, VI; composite analysis of, VII; selection of fibrous materials for drying out, polishing, cutting down, and mat finishing, VIII, A (4) 148; compressed air for, IX, A (1) 27.
bright annealing of, physicochemistry of, A (10) 325.
butt welds, fatigue tests of, in structural plates, A (3) 96.
cadmium spot tests for, A (5) 199.
carbon-molybdenum steel, high-temperature characteristics, A (10) 334; carbon-molybdenum steel pipe for temperatures 750° to 1100°F, A (10) 334.
cast iron, abrasion resistance, A (6) 207; wear-resistant gray type, heat-treatment of, A (1) 29.

**Metals** *(continued)*
castings and welds, X-ray irradiation tests on, A (1) 27.
and ceramic bodies, jointing or joining process, P (2), 80, A (3) 121–22, P (5) 204; air-tight joints between, P (7) 249; soldering process for, P (8) 294; for metal-glass seals, studies on, A (6) 214.
cleaning or descaling of, electrolytic process and apparatus, P (2) 54.
cleaning of, portable electric surfacer, A (8) 268.
for coating ceramic ware, P (8) 270.
controlled atmosphere furnace for annealing, A (4) 154.
copper, nickel silver, and stainless steel, automatic polishing and buffing of, A (8) 267.
corrosion resistance in polishing, A (8) 267.
corrosion-resistant, symposia review, A (4) 149.
cutting fluids for, types of, A (4) 127; use of, A (11) 345.
defects in, from grinding practice, types of, A (1) 2.
and glass, effect of pressure on modulus of rigidity of, A (7) 247.
gold and platinum, contact angle and work of adhesion on, II, A (7) 249.
hydrochloric-acid resistance of, A (9) 311.
iron, Al, Cr, U, Zr, and Ti, separation of, from Mn, Co, Ni, Ca, Sr, Ba, Mg, A (6) 234.
iron and iron alloys, pyrometers for temperature measurement of, A (10) 335.
iron, pearlitic, abrasion resistance tests on, A (6) 207.
iron and steel, X-ray tests on, A (11) 366.
iron casting, soda ash in, A (6) 213.
for machinery for clayworking, improvements in, A (5) 193.
metal deposition in arc welding, A (5) 174.
metallic materials, surface defects and behavior of, A (10) 321.
metallic polished sections, heat measurements in, A (10) 321.
molten baths, temperatures of, method and apparatus for determination, P (11) 361.
Monel, for glass molds, A (7) 248–49.
noble, for coating glass, A (4) 138.
plating industry, health hazards in, A (8) 293.
polish layer on, nature, A (7) 240; polished surfaces, electron microscopy for studies on, A (1) 2.
polishing, Beilby amorphous layer theory of, A (11) 346.
printing on, machine for, P (5) 194.
refractory, process of joining quartz articles to, P (5) 183.
roughness and unevenness, apparatus for tests on, A (10) 321.
separation of, control of $p_H$ value in, A (10) 342; separation by hydrogen sulfide, I–II, A (11) 366.
sliding, surface temperature measurements, III, A (7) 240.
special types, polishing and buffing of, A (2) 51.
spraying of, fundamentals and application, A (6) 226.
steel casting design for engineer and foundryman, A (10) 335.
steels, and cast irons, arsenic in, determination, A (4) 160.
columbium in, A (4) 149.
crucible tool, manufacture of, A (4) 149.
hardened, surface grinding of, A (3) 92.
hardening in electric muffle furnace, A (2) 78.
heat-resisting: for glass tools, A (8) 274; in industrial furnaces, A (8) 284.
high temperature thermal conductivity tests on, A (5) 193–94.
low alloy (medium manganese), abrasion resistance of, A (4) 127.
manganese, grinding finish for, A (1) 1.
Marathon type for chemical apparatus, A (2) 78.
Mo-Max and 18–4–1, comparison of microstructures of, A (4) 151.
silicate inclusions in, reduction of, by added aluminum, A (4) 135.
silicotitanium as deoxidizer for, A (4) 162.
stainless: finishing welds in, A (6) 207; grinding and finishing of, A (3) 91; surface spraying process for oil industry, A (10) 334.
Thermax type, A (1) 31.
tool and alloy, raw materials for, A (11) 360.
for tools: induction-furnace melting of, A (11) 360; purchase and inspection of, A (11) 360.

**Metals** *(continued)*
surface-roughness measurements on, Profilometer for, A (7) 240.
surfaces of, physical properties: kinetic friction, I; viscous flow of liquid films, II; temperature of lubricated surfaces, III, A (7) 240; polishing, surface flow, and formation of Beilby layer, IV, A (3) 92.
tin coatings, thin, polishing and buffing of, A (6) 207.
vertical cores, modern ovens for, A (1) 9.
wear mechanism in, method for studying, A (9) 310.
wear-resisting, for clay machinery use, A (3) 111.
welded seams, alternating-current nondestructive test for, A (3) 95.
welding of. See *Welding*.
X-ray microanalyzer for tests on, A (9) 311.
**Metals for enameling.** See also *Cleaning of metals; Pickling; Welding.*
alloy steels: iron–cobalt system, study, A (1) 8–9; tension and notched-bar tests, A (1) 9.
Bullard-Dunn process for descaling, A (2) 56.
cast iron, changes in, literature references, A (11) 348.
composition of, A (2) 56.
die castings, A (1) 7.
gray graphitization of, A (4) 135.
metallographic characteristics and enameling qualities of, A (2) 57.
properties of, A (1) 8.
spark spectrograph for chemical analysis of, A (7) 245–46.
unusual type, examination of, A (3) 96.
castings: blasting or cleaning of, A (9) 299; cleaning and preparation of, cost study on, A (3) 96; for porcelain enamels, B (1) 10.
cleaning of, electrolytic alkaline process, A (3) 95–96; cleaning metallic surfaces, A (5) 174; cleaning operations, A (8) 271.
copper: enamel process for, A (5) 174; vitreous enamel for, A (2) 59.
corrosion of, mechanism of, I, A (4) 134.
degreasing of, P (2) 59.
enamel adherence to, theories, A (11) 347–48.
enamels or glass on, removal of, P (7) 246.
ferrous sheet metal, process for, P (2) 59.
films on, relation to cleaning, A (8) 271.
heat transfer in, comparison with other materials, B (9) 301.
iron: pretreating surfaces, P (3) 98; surface oxidation treatment, P (8) 272; castings, composition for, P (8) 272.
iron and steel: characteristics of, for porcelain enameling, A (2) 56; nickel dip for, A (7) 245.
mold facings for cast iron, effect on vitreous enamel, A (11) 348.
pickling of, A (4) 135; see also *Pickling.*
preparation of, P (2) 59.
pressed iron for wash fountains, A (1) 8.
pressed steel *vs.* cast iron for bathtubs and plumbing fixtures, A (1) 9.
production method, A (9) 300.
rustless iron, composition of, P (9) 301.
sand- and shot-blasting of, A (1) 9.
sheet and cast iron, design of, A (3) 96.
sheet iron: electric cleaning and pickling of, A (6) 212–13; increase of impact resistance, A (10) 324; raw ware, analysis of defects in, A (2) 58.
sheet-iron parts, forming process, A (9) 300.
sheet metal *vs.* cast iron for bathtubs, A (1) 9.
sheet steel: relation to fishscaling, A (4) 135; relation of ground-coat adherence to thickness and yield value of, on enamel chipping, A (6) 213; vitreous enamels for, P (5) 176.
steel: glass-coated, A (1) 8; heat-resistant, A (6) 213; microscope tests for surface finishing, A (2) 57; nonmetallic inclusions in, A (1) 8.
**"Metatalc,"** proposed name for magnesium metasilicate, A (6) 232.
**Metropolitan Museum of Art.** See *Art and artware.*
**Mexico,** pottery industry in, A (3) 122, A (5) 171.
$Mg_5Cu_{11}Al_{16}$, data on, A (6) 234.
**Micas,** alkali, chemical composition of, A (1) 35.
in argillaceous sediments, A (4) 157.
*vs.* glass, breakdown field strength of, A (3) 99.

**Micas** *(continued)*
lithium, and sericite, X-ray powder photographs of, A (8) 290.
in U. S., Bur. Mines information on, B (7) 263.
**Microanalytical methods,** A (2) 85; in chemical laboratories, A (4) 162.
**Micro-elementary analysis,** automatic combustion in, electric furnace for, A (8) 284.
**Microgasometric analysis** with dilatometer, A (8) 291.
**Micrometer ratchet,** use of, A (4) 151.
**Micrometers,** integrating, for geometrical analysis of rocks, A (1) 29.
metal viscometer for measurements on slips and glazes, A (6) 226.
**Micromethod** for determination of melting points, A (5) 201.
for specific gravity of minerals and rock constituents, A (9) 311.
**Micronizer** for grinding process, A (10) 334.
**Microphotometer** for quantitative spectrochemical analysis, A (9) 317.
**Microprojection method** for counting impinger dust samples, B (6) 238.
for measuring size of fine powders, A (5) 169.
**Microrefractometer,** simple design, A (10) 334.
**Microscopes,** improved illumination for, A (4) 150.
for industrial research, use of, A (5) 194.
polarizing, and camera combination for mineralogic and geologic tests, A (1) 29.
powerful, for tiny objects, A (4) 151.
for steel surface tests, A (2) 57.
thermal, for crystal formation at 3632°F, A (4) 152.
**Microscopic method** for particle measurement, A (10) 335.
**Microscopy,** electron, for tests of polished metal surfaces, A (1) 2.
for ore analysis, A (8) 289.
**Milling,** mill room and operations of, A (11) 348.
**Mills.** See also *Grain size; Grinding apparatus.*
ball, for colloid milling, A (8) 284.
comparison of low *vs.* high discharge for, A (1) 27–28.
for fine grinding, tests on, B (7) 258.
lining for, P (7) 259.
patent designs on, P (1) 31, P (3) 112.
and pebble types, P (9) 311.
rod, and tube, application and characteristics of, A (10) 333–34; pebble, rod, and tube, grinding ceramic materials in, A (2) 78.
sound-control system for regulating flow of feed into, A (4) 150.
unique design of, A (3) 109.
"Bloch Rosetti," laboratory grinding mill for enamels, A (3) 97.
capacity of, *vs.* grindability, A (9) 310.
cement, multichamber, formula for determining output of, A (6) 212.
cold rolling, roll grinding machines for, A (6) 207.
cone, "structure tester" to determine grindability, A (8) 284.
crushing and grinding, automatic control of, P (2) 79.
grinders and pulverizers, types of, A (7) 258.
grinding, end liner for, P (11) 361; mixing and grinding, P (2) 80.
multichamber, formula for determining output, A (9) 310.
pebble and ball, multiple use of, A (10) 335.
pug, de-airing units for, A (11) 359; pugmill knives, alloys for, B (8) 286.
pulverizer, P (4) 153.
quartz, P (10) 336.
swing-hammer type, for grain-size reduction, A (9) 311.
tube, laboratory-batch, clinker grindability of, A (3) 111.
wet-grinding, circulating load formula, A (11) 359–60.
**Mineral granules,** colored, production of, P (1) 47.
**"Mineral spar"** for enamel industry, A (3) 97.
**Mineral suspensions,** automatic control in tests on, A (2) 77.
**Mineral wool,** composition, P (7) 251; process and apparatus for production, P (7) 251; see also *Glass, wool; Insulating materials.*
**Mineralizers,** effect of, on calcium aluminates and aluminoferrites, A (1) 6.
fluoride, effect of, on oxides, silicates, and aluminosilicates, A (2) 84.

**Mineralography,** Harvard Univ. studies, A (1) 39.
**Mineralogy,** field tests for minerals, B (11) 364.
and metallography, X-ray photomicrographs for, A (9) 311.
natural-color photography for, A (5) 192.
petrographic thin sections at low magnifications, photography of, A (5) 193.
research trends in, A (4) 158.
**Minerals.** See also *Clays; Earths; Ores; Rocks; Shales,* and specific mineral names.
artificial, use of high temperatures and pressures in detonation of explosives for reproduction of, A (7) 258.
atomic structure of, B (6) 231–32.
beryllium, lithium, titanium, and zirconium, occurrence and commercial use, A (10) 339.
biaxial, graphic method of determining approximate axial angle from refractive indices, A (1) 44.
chromite, B (3) 106.
clay, advances in knowledge of, A (11) 363.
with clay, loam, etc., washing apparatus for breaking up component parts, P (4) 153.
clay, X-radiogram tests for, A (11) 363.
coarse-grained, dressing and separation of, A (5) 193.
coercimeter for, development and application, B (11) 365.
coercive force of rods deformed by torsion, B (11) 365.
concentrator for, P (4) 153.
crystal structure *vs.* base-exchange capacity, relation between, A (1) 364.
dehydration apparatus for, A (9) 310.
dickite, halloysite, and hydrated halloysite, crystal structure, A (10) 339.
ferrous oxide in, determination, A (1) 42.
field tests for, B (4) 159, B (11) 364.
flotation studies, A (1) 28.
froth-flotation concentration, P (2) 79–80.
fume settler, sonic flocculator for, B (11) 365.
grinders and pulverizers for, types, A (7) 258.
incrustation of, selective, A (5) 198.
industrial: and rocks, B (5) 199; and rocks, specific types and detailed data, B (11) 364–65; special methods for concentrating and purifying, A (11) 364.
iron, aluminum, and chromium, quantitative separation from other members of ammonium sulfide group, A (5) 201–202.
leightonite, properties, A (5) 196–97; relation to polyhalite, A (5) 198.
Li, Rb, and Cs in basalts, granites, feldspars, and clay slates, A (7) 262.
magnesite-talc, use, A (2) 72.
melting points and transition temperatures, B (10) 336.
mica-like, in soils, A (8) 289.
microscopic tests on, with polarized light, A (8) 283.
mineral concentration, process, P (10) 341; mineral concentrator, P (11) 361.
minor nonmetals, Bur. Mines study, B (11) 365.
natural, and rocks, laboratory manual and gravimetric methods, B (4) 164.
nonmetallic, in chemical industry, A (4) 165.
concentration process, P (3) 117.
differential concentration, P (3) 117.
geology of, in southeast, A (10) 339.
mechanical preparation, A (4) 151.
mining and preparation, B (3) 95.
polar, flotation processes, A (11) 360.
nonopaque, small set of grids for determination, A (5) 193.
nonsulfidic, flotation of, A (5) 193.
nontronite group, names, A (11) 363.
opaque, Harvard Univ. studies, A (1) 39.
and ores, froth-flotation concentration, P (2) 79, P (2) 80.
physicochemical nature of metallic interfaces, B (11) 365.
physics studies, B (11) 365.
properties of, methods for valuation, A (11) 364.
rock-forming, hydrolysis of, A (2) 88–89.
rocks, and metals, niobium and tantalum in, method for detecting, A (2) 85.
and rocks, specific gravity of, rapid micromethod for, A (9) 311.
and rocks, spectrum analysis with cathode layer, B (10) 341.
separation of, brass centrifuge for, according to specific gravity, A (2) 77.
separator for, P (5) 199.
of serpentine, physical data, A (9) 313.
**Minerals** (*continued*)
silicates, microanalysis of, A (5) 201.
sintering of, for porous products, P (7) 259.
in soil types and horizons, relative abundance of, A (1) 40.
sources of, in Abyssinia, types of, A (10) 339–40.
in British Empire, 1935, B (1) 40.
in Calif., production data, B (10) 341; clay, of Calif. soils, A (11) 363; in southern Calif., A (10) 340.
in China, A (1) 38.
chromite, European deposits of, A (1) 18.
clay types in Ill. limestones and dolomites, A (6) 229.
from Colo. volcanic rocks, petrologic studies, A (10) 340.
in Greece, data since 1926, A (6) 230.
gypsum, anhydrite, celestine, and strontianite in Great Britain, B (11) 364.
heavy, in granitic rocks of Yosemite region, A (5) 196.
in India, 1936 production, A (5) 197; résumé for 1935, A (6) 230; talc, asbestos, serpentine, and kaolin in, A (10) 341.
industrial, of Canada, in 1937, A (10) 339; riebeckite in quartz veins in Ont., A (5) 198.
of Johore (Malay), A (10) 340.
mining of apatite, nepheline, and rare earths in Russia, A (6) 229; Russian, review of, A (3) 116; spinel, corundum, and titano-magnetite deposit in Siberia, A (6) 231.
montmorillonite, origin in Pa., A (5) 197.
nonmetallic, in Ore., B (1) 40.
N. C.: ceramic raw materials of, A (10) 338; location and distribution, A (10) 339.
in Ohio, B (7) 263.
rocks, and earths, Austrian types, A (6) 230.
in Slovakia, data on, A (7) 262.
taenolite from Ark., physical and optical properties of, A (5) 198.
in Tenn., B (4) 159; ceramic resources of Tenn., A (9) 313.
Texas ceramic resources, A (10) 338.
in U. S.: Bur. Mines studies on, B (7) 263; minor nonmetals, B (3) 117; 1938 yearbook, B (11) 365; nonmetallic, 1937 rept., B (2) 83.
talc-magnesite, for refractory mixtures, A (2) 72–73.
world supplies of, B (1) 40.
**Mining.** See also *Blasting apparatus; Excavating apparatus; Explosives.*
air conditioning in, for health and safety, B (8) 294.
American Mining Congress, sound-control system for regulating feed flow into ball mill, A (4) 150.
clay pits, mechanical handling, A (5) 193.
of clays: apparatus for, A (2) 78; by blasting, A (1) 47; clean method, A (1) 46; principles for, A (3) 123.
of coal, menace of hydroelectric program in southern states, A (7) 266; coal-mine fires, fluid mud for extinguishing, A (10) 344.
effect of angle of drilling on dust dissemination, B (7) 266.
and grinding of clays, Malvern, Ohio, B (2) 90.
hydraulic stripping of stone quarry, A (4) 165.
material handling equipment, I–VIII, A (3) 110, A (4) 150.
and mineral resources in China, A (1) 38.
and mines, 1937 register, Vol. XIX, B (4) 159.
1938 year book, B (8) 290.
open-pit and underground, A (1) 46.
power scrapers and slackline cableway excavators, functions, A (3) 110.
and preparation of gypsum, B (3) 95.
and processing of glass sands in Calif., A (4) 157.
relation of dust concentration to depth of hole during wet drilling, B (7) 266.
rock-drill lubrication, A (4) 152.
in Russia, of apatite, nepheline, and rare earths, A (6) 229.
safety devices in, B (8) 294.
silicosis control in, A (8) 293.
wheelbarrow for, A (9) 311.
**Mirrors.** See also *Glass, mirrors; Glass, reflectors.*
aluminum, production by metal evaporation in vacuum, A (4) 139.
aluminum-coated glass for, A (9) 301.
history of English types, A (8) 273.
**Mississippi,** clay investigations in, A (1) 47.
**Mixing apparatus** for finely divided material, P (10) 336.
for granular or pulverulent materials, P (2) 80.
mixers in process industries, A (10) 334: propeller-type, A (10) 335.
test methods for indicating value, A (10) 335.
**Models** for aërodynamic study of fuel practice, A (4) 153.
atomic packing, of common silicate structures, A (5) 199.
Niggli's chain, of polymerized molecule of silicic acid in melt, A (1) 43–44.
**Mohs' method** for scratch hardness, A (1) 1.
**Moisture.** See also *Dehydration; Drying.*
Dean-Stark method and apparatus, A (10) 335.
distillation process and improved trap for, A (10) 334.
in gases and solid fuels, automatic determination, A (1) 41.
in refractories, distillation method for determination, A (5) 200.
in soils, moisture meter for measurements, A (6) 231.
in soils and molding sands, burning alcohol method for water evaporation, A (7) 264.
**Molding** shaped articles, press for, P (3) 112.
tamping, and troweling of brick, automatic machine for, A (1) 27.
of tile, presses for, P (2) 80.
**Molding apparatus,** compressed air for, A (1) 28.
**Molding sands.** See *Sands.*
**Molds,** clay, montmorillonite, P (11) 353.
and cores, spraying apparatus for, A (11) 360.
for glass, forming, P (5) 183.
metallic, for working glass, A (7) 248.
plaster, of high tensile strength, A (1) 6.
tile, with Calrod heating unit, A (3) 109.
**Molecular theory** of lubrication, A (6) 225.
**Molten pulverized bodies,** apparatus for projection of, P (10) 336.
**Molybdenum** and its compounds for ceramic use, A (1) 38.
**Montagne equation** for flame temperature calculation, A (11) 361.
**Montmorillonite,** clay type, structural formula, A (8) 290.
and halloysite, chemical studies on, I–II, A (11) 363.
in mold composition, P (11) 353.
in Pa., origin, A (5) 197.
wetting of, behavior, A (8) 288.
**Moore, Bernard,** reminiscences of, A (3) 123.
**Mortars.** See also *Cements; Gypsum; Masonry; Refractories.*
for brickwork piers, tests, A (9) 307.
lime, silicate formation in, A (10) 329.
"Qu-Chromatic," plastic and refractory mortar for furnaces, A (2) 81.
refractory: ball-clay type composition, A (7) 254; mechanical properties and control of, A (2) 74; see also *Refractories.*
and refractory cements, manufacture of, II, A (4) 132.
Roman pozzuolanas, studies, A (4) 133.
for unit masonry, A (9) 316; properties of, A (1) 18.
**Mosaics** in Antioch floor, history of painting, A (6) 210; glass, process for, A (4) 138; see also *Art and artware.*
**Muffles,** heat-resisting, for vitreous enameling, A (7) 245.
**Müller-Hiller process,** modification of Bayer process for alumina extraction, A (2) 69.
**Mullite.** See also *Refractories, mullite.*
artificial agglomerated, for regenerator packing, A (2) 69.
fused: data on production, A (11) 354; Chasov-Yar clay for, A (7) 253.
in melted clays, studies on, A (1) 47.
and sillimanite, review and studies, A (1) 44.
**Museums.** See also *Exhibitions.*
Commercial, for pottery exhibit, A (3) 122.
French, ancient ceramic ware in, A (10) 323.
**Mylius boiling method** for chemical resistance of glass, A (6) 214.
**Mylius system** for classification of soda-lime-silica glass, A (7) 247.

**Nacrite,** physicochemical study of, A (4) 157.
studies on, and synthetic production of, A (7) 261–62.
**National Paving Brick Assn.,** report of Research Bureau, A (6) 220.
**Neodymium,** X-ray spectrographic determination of, in presence of other rare earths, A (7) 264.

**Neophane glass,** color tests on, A (11) 350.
**Nepheline rocks,** quantitative mineralogical composition of, A (4) 158.
**Nepheline syenite** in ceramic products, use, A (9) 309.
chemical and mineral classifications, A (7) 262.
in glass batches, effect of, A (4) 138.
industrial uses, A (7) 262.
of Ont., A (1) 38, A (7) 262, A (11) 364.
**Nephelite "worms"** in glass, cause and prevention of, A (5) 179–80.
**Nernst heat theorem,** Maxwell formula, and Stefan radiation law for radiation pressure, relation of, A (9) 312.
**Newcomb Art School,** A (5) 171; history of, A (8) 269.
**Nickel dip** for iron or steel for enamels, A (7) 245.
**Nickel hydrate,** oxidation of, by sodium persulfate in alkaline medium, A (3) 120.
**Nickel hydrosilicates,** X-ray studies on, A (6) 235.
**Nickel sulfide** and cobalt sulfide, mechanism of precipitation, II, A (11) 366.
**Nicloux method,** modified, for carbon determination, A (1) 42.
**Niggli's chain model,** expanded version, A (1) 43.
**Niobium** and tantalum in minerals, rocks, and metals, method for detecting, A (2) 85.
**Nomograms** and nomographs, alignment charts, construction and use of, B (1) 45.
for chemical engineering calculations, A (5) 202.
for porous solids, methods of density determinations, A (6) 224, A (11) 367.
quadrant-chart type, application to clay slips, A (4) 162.
**Nonmetallic bodies,** dense (Carborundum Co.), P (5) 170.
**Nonmetallic minerals.** See *Minerals.*
**Nonplastic materials** in heavy clay industry, A (6) 220.
**Norris and Fay method** for volumetric determination of selenium, A (5) 202.
**Norton Co.,** house organs of, A (6) 237.
**Noyes and Bray method** for sodium subgroup analysis, A (8) 291.
**Nübel formula** for calorific values of fuels, A (6) 228.
**Nuglu,** abrasive bond, A (8) 268.

**Occupational diseases.** See *Diseases (industrial); Safety; Silicosis.*
**Ohio Highway Dept.,** base-course design studies, A (6) 219.
**Oils.** See also *Fuels, oil; Lubrication.*
faults from, prevention of, A (6) 215.
for metal cutting fluids, A (4) 127; classification and use, A (11) 345.
nonspreading lubricating types, A (4) 152.
sulfur in, determination of, A (10) 342.
**Oil-shale strata** in Scotland, A (6) 230–31.
**Oilstones,** classification and use, A (11) 345.
**Olivine,** tests at Univ. of Wash., A (4) 145; olivine rocks, mineral orientation in, from Rum and Skye, A (6) 230; see also *Refractories, olivine.*
**Ontario Research Foundation,** work and purpose of, A (9) 318.
**Opacifiers.** See also *Enamels, opacifiers; Enamels, white.*
cerous oxide for, A (5) 173.
halogens in glass, effect of, A (2) 63.
Hy-Opax and Zinnit, A (3) 97.
for lead glass, arsenious oxide, A (5) 176.
Opaline for, A (8) 290.
sodium fluosilicate, use of, A (2) 58.
stannic oxide for wet enamels, B (7) 248.
tin oxide and ceric oxide, properties of, A (2) 57.
for vitreous enamels, P (8) 272.
in wet enamels, stannic oxide for, B (7) 246; effect of grain size on $SnO_2$, A (11) 349.
white, chiolite for, A (11) 349.
zinc sulfide (ZnS) effect and gas opacification, A (4) 134.
zirconium oxide for, P (5) 176; for vitreous enamel, P (3) 98; for white vitreous enamel, P (2) 59.
**Opacity** of paper, etc., apparatus for, P (10) 336.
photometer with selenium cell for determination of, A (11) 349.
**Opaline** as new ceramic opacifier, A (8) 290.
**Opaque bodies,** strain in, measurement of, A (5) 200–201.
**Open-hearth furnaces.** See *Furnaces, open-hearth; Refractories for furnaces.*
**Optical constants,** effect of alumina on, A (2) 61.
**Optical instruments,** physics in manufacture of, A (3) 111.
**Optical polarizing material,** development and use of, A (7) 258.
**Optical specification** of light-scattering materials, Kubelka-Munk theory, A (1) 29.
**Optical tests** on $MgO$-$SiO_2$ bodies, A (2) 51.
**Optics,** colloid, reciprocity theorem in, A (3) 120.
**Ores and ore minerals.** See also *Minerals.*
Bur. Mines rept., ore-dressing studies, B (6) 227; Bur. Mines test studies, 1936–1937, B (9) 315.
chromite with alumina and magnesia, treatment of, P (5) 203.
grindability and grinding characteristics of, A (6) 225.
iron content of, use of $K_2Cr_2O_7$ for determination of, A (3) 121.
iron determination in, spectrophotometric method for, A (8) 292.
kyanite, treatment of, P (3) 118.
low-grade magnesite, flotation concentration of, B (11) 364.
and metallurgical drosses, tin determination in, A (4) 161.
microscopy and practical applications in, A (8) 289.
and minerals, testing laboratories for, B (8) 294.
ore-concentration process, A (5) 193.
origin and nature of, historical study, A (3) 116.
oxidized, froth flotation for concentration of, P (10) 341.
serpentine, for refractories, A (2) 74.
silicate, treating process, P (11) 367.
sources of: chrome-iron, geology and mining in Balkan Mts., A (5) 196; molybdenum-vanadium, from Ariz., flotation of, B (6) 227; in western Turkestan, A (5) 197.
**Organic materials,** helium passage at ordinary temperatures, A (1) 44.
**Orsat apparatus** for gas analysis, A (5) 201; modification of, A (2) 78.
**Ortho salts** of oxygen acids, A (2) 86.
**Oscillating crystal method** for structure of cryolite, A (9) 317.
**Osram process** for streaks in glass tanks, A (5) 189.
**Ovens.** See also *Furnaces,* and cross-references.
by-product coke, cooling and reheating process, A (10) 330.
coke, wall failure by coal-ash reaction, A (11) 354.
for enameling, A (3) 97; with continuous conveyer, P (10) 325.
tunnel, P (9) 312.
for verticle cores, A (1) 9.
**Ovenware,** glazed, zinc in, A (2) 77.
**Owens-Illinois glass block tests,** A (8) 276.
**"Owep" apparatus** for electrical determination of clay and ceramic body humidity, A (1) 29.
**Oxide films** on iron, thickness measurements on, A (6) 234.
**Oxides** in cryolite, molecular state of, A (2) 85–86.
solubility of, at 1200°C in molten boric anhydride, A (7) 264.
**Oxygen acids,** orthosalts of, A (2) 86.
**Oxygen content** of air, Lindemann-Winkler apparatus for, A (5) 200.
**Oxyhalide compounds** of silicon, review and new compounds, A (11) 365.
**Oxyhydrates** and hydroxides, studies on, B (6) 235.

**Palmitate method** for hardness of water tests, A (4) 160.
**Pan grinding,** relation between revolutions of runners and pan diameter, A (8) 285.
**Paneth method** for flame studies, A (6) 228.
**Parisio,** glass panels of, method of decoration, A (8) 275.
**Parkinson (English) stove,** enameled sheet-iron panels, A (9) 299.
**Particle size.** See also *Grain size,* and cross-references.
analyzer for fine dry powdered materials, A (10) 335.
apparatus and method, A (10) 333.
classification of methods of mechanical analysis, A (4) 149.
clay fractionation into closely monodispersed systems, A (11) 365.
in clays, measurement, A (4) 162.
dry impalpable fines, classifier for, P (6) 227.
of fine abrasive powders, microprojection and sedimentation methods, A (5) 169.
groups of crude clay, A (9) 314.
**Particle size** (*continued*)
law of size distribution and statistical description of particulate materials, A (11) 360.
methods: sieve, elutriation, sedimentation, microscopic, and miscellaneous, A (10) 335.
of milled material, colloidal fraction, A (11) 359.
particle measurement problems, A (10) 335.
relation of, to base exchange and hydration properties of Putnam clays, A (5) 197.
sample splitter, P (10) 336.
and shape, factors of, in grinding, A (3) 110.
small particles, centrifuge for optical determination of, P (11) 361.
Wagner turbidimeter for 325-mesh sieve materials, A (8) 283.
X-ray method for measurement of, A (11) 360.
**Particles,** fine structure, X-ray apparatus and test methods, A (10) 335.
in fluids, law of motion of, A (8) 284.
**Particulate materials,** classification of methods of mechanical analysis of, A (4) 149.
**Pastes** for polishing. See *Polishing.*
**Patents,** American patent system, B (4) 166
how engineers may profit by, A (6) 236.
Rept. of Comm. on, A (7) 266.
technological aspects of, B (4) 166–67.
**Pattinson process,** basic magnesium carbonate method for lime and magnesia separation in dolomite, A (11) 356.
**Paving materials,** attrition tests with Deval, Lovegrove, and Los Angeles machines, A (4) 142.
base-course design, A (6) 219.
brick-on-concrete pavements in Iowa, mortality curve study, 1909–1928, A (9) 307.
brick gutters in N. Y., A (4) 141.
brick pavements (U. S.), in Md., A (4) 141.
in Mich., A (4) 141.
in Minn., A (6) 219; parking strips in, A (4) 141.
in N. Y., maintenance data, A (4) 141; reconstruction of, A (6) 220.
in Ohio: Hocking County experimental road, A (6) 220; reconstruction data, A (8) 220; tests in, A (4) 141, A (9) 306.
in Va., A (5) 184.
brick roads: asphalt, block stone, comparative data and cost, A (4) 141.
de-aired vertical fiber, for Lincoln tunnel, A (5) 184.
design and construction of, A (4) 142.
in Europe, A (6) 220.
longitudinal, failure of, A (6) 220.
patent design for, P (1) 18.
rattler test for broken brick, A (6) 220.
reinforced, A (5) 184.
for road surfacing, P (11) 353.
rolling methods for, A (5) 184.
specifications, A (6) 220.
surface design to prevent slipperiness, A (9) 306.
brick for stadium construction, A (6) 220.
cast paving blocks from blast-furnace slags, A (6) 219.
colored, for athletic and pleasure grounds, P (8) 282.
concrete pavement cracks and expansion joints, Comm. rept., A (9) 299.
concrete pavement slabs, curing tests, A (9) 298.
concrete road surfaces, coefficients of friction with rubber tires, A (9) 298.
effect of weathering on physics and chemistry of road materials, A (9) 315.
filler materials: and brick for, A (6) 219; for brick roads in Ohio and Ill., A (4) 142; plasticized sulfur type (Thiokol sulfur and asphalt), A (6) 220.
flexible bonding agent of glass fibers for, P (7) 250.
laboratory studies on best design for, A (4) 142.
nonmetallic minerals in Ore., B (1) 40.
pavement design, developments in, A (4) 142.
pavements, actual service lives of, preliminary studies on, A (9) 307.
paving tile, medieval English types, B (6) 210.
paving tile, thermal expansion of, in relation to quartz crystallographic transformation, A (6) 220.
plasticized sulfur as jointing materials for, A (1) 18.
Rept. of Project Comm. on Fillers and Cushion Courses for Brick and Block Pavements, A (9) 307.
road metals and aggregates, attrition tests A (4) 142.

**Paving materials** (*continued*)
shale paving brick, firing with natural gas, A (3) 113.
Zorbit, asphalt-rubber compound, and Trinidad asphalt, A (9) 307.
**Peat** for heat- and sound-insulating materials, P (8) 279.
**Peat masses,** plastic-viscous properties of, methods, A (9) 311.
**Pegmatites,** feldspar from, data, A (6) 230; French deposits, A (8) 289; in S. D., minerals of, A (3) 116.
**Permeability** *vs.* porosity of tank blocks, studies on, A (9) 308.
**Perminal W,** textile wetting agent for coal and stone dusts, A (1) 47.
**Permutites** and clays, negative adsorption and steam pressure isotherms in, B (3) 117.
Hüttig's formula for, validity of, A (2) 84.
**Petrogenesis,** transfusion of quartz, I, A (1) 36.
**Petrography** for dust analysis, method, A (6) 237.
of igneous rocks, IV, B (8) 290.
for studies on atmospheric dust particles, B (6) 238.
for studies of silica brick, A (7) 254.
**Petroleum products,** bleaching clay for purification, III–VI, A (4) 155; VIII, A (10) 338.
**Pfahl quartz** for silica brick production, A (6) 220.
**Pfefferkorn method** for plasticity measurements, A (3) 123.
**Phase equilibria** in hydrocarbon systems, thermodynamic properties of *n*-butane, XIX; isobaric heat capacity of gaseous propane, *n*-butane, isobutane, and *n*-pentane, XX, A (5) 195–96.
**Phase-rule diagrams,** iron-cobalt-cobalt silicide-iron silicide, thermal and micrographic methods for study, A (3) 97; supplement to, A (5) 202.
**Philips Metalix tube** for X-ray apparatus, A (3) 122.
**Phlogopite-apatite** in Quebec, Can., A (10) 340.
**Phosphate method** for determination of magnesium, A (2) 86; for determining small amounts of zirconium, A (3) 118.
**Phosphate rock,** analysis of, A (8) 291.
**Phosphates,** boric acid, or borax, melting of, processes for, P (6) 235.
**Phosphorescent cement,** process for, A (10) 323.
**Photocells** for dispersoid analysis, A (8) 285.
**Photoelasticity,** theory of, A (2) 87.
**Photoelectric cell** or "electric eye," industrial applications, A (1) 28.
**Photoelectric illumination meter,** portable, A (8) 285.
**Photogoniometer,** universal X-ray type, use of, A (1) 31, A (3) 111.
**Photography.** See also *Cameras.*
applied, advances in, A (6) 224.
for ceramic decoration, photographic relief method, A (4) 129.
films, fireproof, from bentonite clay, A (9) 314.
lens for, P (7) 250.
natural-color technique for mineralogy, A (5) 192.
for petrographic thin sections at low magnifications, A (5) 193.
photographic principles of X-ray material testing, A (11) 366.
photographic study of colors of slag constituents, A (6) 233.
porcelain enamel finish, A (10) 325.
precision powder camera for high temperatures, A (8) 285.
for recording new wave-lengths in arc spectra of iron and titanium, A (4) 162.
"reflex photos" for glaze study, A (3) 107–108.
**Photoluminescent glass,** production of, P (5) 183.
**Photometer** for opacity tests, A (11) 349.
Spekker, for ultra-violet light transmission of sheet glass, A (11) 351–52.
**Physics,** effect of mass production of science, A (4) 162.
industrial physicist in glass factory, work of, A (7) 246; in industry, symposium on, B (6) 232.
mechanics and heat data for technical students, B (6) 235.
in optical instrument manufacture, A (3) 111.
properties of matter, B (1) 45.
renaissance of, B (4) 164.
theory of magnetism, XXX, A (4) 160.
**Pickling.** See also *Cleaning of metals; Inhibitors.*
acid, sodium orthosilicate and sodium cyanide for, A (1) 7.
alkalis for, A (1) 7.
cleaning and pickling tanks, gas immersion heating of, A (8) 271, A (10) 324.
control of, A (4) 134; control of pickling bath, A (5) 174.
Ferrolite a.c. electro-pickling process, tests on, A (9) 299.
of ferrous metals, A (4) 135.
fumes from acid pickling baths, push-and pull fume removal, A (11) 349.
gas immersion heaters for, A (8) 271.
inhibitors for, use and types of defects caused by, A (11) 348.
prevention of corrosion by acids in, A (2) 58.
process in ore concentration, A (5) 193.
process for tinplate rolling mill use, A (4) 136.
of steel: research program, A (11) 348; review of theory and research on, A (6) 213.
theory and practice of, A (2) 58.
titrating apparatus for, A (4) 134.
vapor in pickle room, direct-fired heater and exhaust fan for removal of, A (1) 8.
waste acids in, removal of, A (6) 213.
**Pigments.** See also *Colors.*
basic materials and compounds of, for pottery, glass, and enamelware, A (6) 209.
black: and clay for cast-iron enameling, A (2) 56; for enamels, fishscaling formation in, A (1) 8.
cadmium, in glass, enamel, and ceramic industries, A (4) 160.
cadmium-selenide red, method, P (7) 264.
ceramic, classification and review, A (6) 209.
cobalt and its compounds, A (4) 156.
for colored Portland cements, A (6) 211; yellow Portland cements, process, A (6) 211.
for enamels (glazes), data, A (11) 347.
hydrated oxide of iron production for, P (11) 367.
for silicate paints for concrete, A (4) 165.
slate waste in Germany for, A (3) 122.
surface pigmenting apparatus, P (8) 286.
titanium for, process, P (6) 236.
titanium dioxide, production, P (6) 235.
zinc-white, preparation, P (6) 235.
**Pipes.** See also *Stoneware.*
clay, casting device, P (5) 194.
clayware, Brittain testing machine for, A (3) 111.
flow of water and compressed air in, charts, A (8) 284.
glass, manufacture, P (6) 219.
of hard porcelain, A (4) 148.
jointing materials, A (5) 193.
porcelain, for hot-spring piping, A (7) 256.
salt-glazed fireclay, Brit. Stand. Specif., A (1) 25.
seamless alloy-steel, specifications, A (10) 334.
**Pipet apparatus** for elutriation analysis, A (11) 360.
**Pitchstone kaolins** and clays, white-firing, tests, A (11) 364.
**Plagioclase,** optical properties, effect of potash-feldspar components on, I–III, A (1) 37.
potash-bearing, optical orientation, III, A (1) 37.
**Plant control.** See *Management; Safety,* and cross-references.
**Plasoleum,** rubber latex base adhesive, A (4) 165.
**Plaster of Paris,** composition, P (8) 271.
**Plasters,** calcium sulfate, types, A (9) 298.
plaster molds of high tensile strength, A (1) 6.
**Plastic earths.** See *Earths.*
**Plastic materials** for brick and tile, treatment, P (8) 282.
research data, A (9) 319.
**Plastic range** of coals, studies, A (10) 337.
**Plastic-viscous properties** of peat masses, tests, XI, A (9) 311.
**Plasticity.** See also *Viscosity.*
crystal, completion of slip-velocity formula, V, A (2) 84.
of kaolins, tests, A (3) 123.
methods for evaluation, A (4) 165.
**Plasticized sulfur** as jointing material for clay products, A (1) 18.
**Plastics,** artificial, grinding and polishing of, A (5) 169.
transparent, compared with silicate glass, A (5) 180.
**Plastometer,** Bingham, modification, A (3) 111.
**Plated surfaces,** Profilometer for measurements, A (7) 240.
**Platinum-wire method** *vs.* sodium-line reversal method for measuring open flame temperatures, A (11) 362.
**Plexi glass.** See *Glass.*
**Polariscope,** photoelastic, for stress measurement in transparent bodies, A (8) 285.
**Polariscope furnace** for strain tests on glass-metal seals, A (11) 350.
**Polariscopic analysis** for doubly refracting materials, A (1) 41.
**Polarized light,** apparatus for microscopic examinations in, A (8) 283.
**Polarizers,** filter, use, A (5) 193.
**Polarizing materials,** optical development and use, A (7) 258.
**Polaroid,** composition and application, A (1) 10; optical properties of, for visible light, A (3) 100.
*vs.* nicol prisms in glass strain tester (Labscope), A (8) 283.
synthetic organic crystal, composition and applications, A (1) 10.
**Polished surfaces,** Profilometer for measurements on, A (7) 240.
**Polishing,** abrasive materials for, P (7) 241.
adhesives composition for wheels, A (8) 267.
of aluminum, method, A (3) 91–92.
and buffing: automatic, for copper, nickel silver, and stainless steel, A (8) 267; efficient methods, A (7) 239; for electroplating industry, A (10) 321; of special metals, studies, A (2) 51; of thin tin coatings, A (6) 207.
of cast brass, bronze, copper, and aluminum, A (7) 240.
composition for, P (10) 322; compound for, P (11) 346–47.
container for polishing-wheel composition, P (9) 296.
effect on corrosion resistance, A (8) 267.
electrically fused abrasives for, capillarity and surface tenacity, A (11) 345.
emulsion polishing composition, P (5) 170–71.
of glass: surface changes in, A (9) 302; effect on surface changes in, A (9) 303.
of metal surfaces, electron microscopy for tests, A (1) 2.
Beilby amorphous layer theory, A (11) 346.
and glass, B (1) 2–3.
nature of polish layer, A (7) 240.
and nickel or chrome alloys, A (7) 239–40.
microscopic tests for comparative analysis, A (11) 345.
of optical glass, studies, A (2) 61.
pastes for: binding agent data, A (7) 239; composition, A (3) 92.
physical properties of surfaces, formation of Beilby layer, IV, A (3) 92.
of porcelain for porosity test, importance, A (9) 310.
thin cement for, A (4) 127.
**Polishing apparatus.** See also *Abrasive apparatus; Buffing apparatus; Grinding apparatus.*
abrading disks applied to, P (11) 346.
and buffing apparatus, P (8) 268.
and cleaning tools, portable electric, P (2) 52.
for finishing and polishing, P (8) 268.
for flat glass, P (8) 277.
for granite, marble, terrazzo, glass, P (2) 80.
manual portable motor for, P (7) 242.
for ores, universal type, A (1) 31.
patent designs, P (1) 4, P (7) 242, P (9) 296.
portable, P (4) 128, P (7) 242, P (10) 322.
sanding and polishing machine, P (5) 171.
wheels, P (3) 93, P (5) 171.
abrasive coating, A (3) 91.
and belts, application of abrasive to, P (1) 3.
permeated with artificially produced hollow spaces by artificial resin and abrasive particles, P (11) 347.
rubber-bonded, for axe blades, A (10) 321.
work-supporting roll for, P (7) 242.
**Polycrystalline systems,** dielectric constants and conductivities of, A (4) 160.
**Polyhalite,** relation to leightonite, A (5) 198; in Tex., A (10) 340.
**Polymorphism,** crystal, theory, A (1) 42.
**Polyphosphate** *vs.* borax for enamels, P (5) 176.
**Porcelain** (fine and electrical types). See also *Art and artware; Insulators.*
American: early history, A (6) 224; ornamental types, A (7) 242; White House tableware, history, A (4) 129–30.

**Porcelain** (*continued*)
apatite, and bone china, manufacture (Japan), A (3) 108.
*vs.* bone china, difference in, A (2) 76.
bushing structure, P (10) 333.
for cables, manufacture and suitability, A (7) 257.
Capo di Monte, 18th Century, A (7) 242.
ceramic tubes, cutting or dividing of, P (11) 359.
chemical, history in Germany, A (2) 77.
Chinese: and European, silver-mounted, A (8) 270; Ming period, A (4) 130; and Sung fresco, A (9) 297.
composite body, P (1) 27.
decoration of, gold paints for, A (4) 130.
defects in, strains in true hard-fire porcelain flatware, A (1) 26.
earthenware and semiporcelain, production, A (4) 147.
electrical, moduli of elasticity and rupture tests, A (4) 147.
electrical, spark plug, P (4) 148.
electrical resistance of, tests on quartz–feldspar–kaolin system, A (2) 76.
English, at Bristol, A (9) 297.
old, at Cleveland Museum of Art, A (3) 93.
old Wedgwood, B (4) 130.
Spode reproductions of Chelsea ware, A (10) 323.
Spode and Wedgwood, hunting scenes on, A (7) 243.
Worcester china, history, A (2) 54; pastille burners, A (6) 210; Worcester vases, A (8) 270.
German: for chessmen and chessboards, A (4) 128; and earthenware at Leipzig Spring Fair, A (4) 148.
German kaolins for, II, A (3) 109.
glazed, adsorbed moisture films on surface, A (11) 358.
hard, expansion and shrinkage measurements, A (11) 360.
firing process and cause of defects, A (8) 282.
hard-fire flatware, strains in, elimination of, A (1) 26.
hard types for tubes, A (10) 332–33.
pipes of, A (4) 148.
relation between grain size of quartz and properties of, I–II, A (6) 224.
for high-tension insulators, studies, A (6) 223.
ignition plug insulators, manufacture, P (11) 359.
leakage film on, A (11) 358.
madonna figures in brilliant colors for, A (7) 243.
manufacture, practical experience in, B (8) 283.
metal plating of, A (7) 243.
molded insulation materials, production, A (9) 309.
for pipes and conduits in place of metals, A (11) 358; for piping hot springs, A (7) 256.
porcelain tubes with lutes to protect thermocouples, A (1) 30.
porcelain umbrellas for protecting bushings, A (11) 358.
porosity tests with microscope, A (9) 310.
Schiff Collection, A (9) 297, A (10) 323.
sealed electrical connections for ceramic bodies, P (1) 27.
of Sèvres: changes in, A (7) 243; at Metropolitan Museum, A (2) 53.
shrinkage of, effect of CaO in glazes on, A (7) 257.
spark plugs, corundum in, composition, P (7) 257.
insulator, P (7) 257.
for internal-combustion engines, P (5) 192.
patents, P (1) 27, P (6) 224, P (8) 283, P (11) 359; production method, P (3) 109.
powdered corundum for, P (6) 224.
service record, A (1) 26.
and steatite for low-voltage insulators, A (6) 224.
structural changes in ceramic membranes, A (11) 359.
talc for, studies, IX–XII, A (5) 191.
thermal conductivity of, relative comparison method, A (1) 15.
thermal-expansion tests, A (3) 111.
from Unaker clay in S. C., A (7) 243.
Vienna, Ferdinand Bloch-Bauer Collection, A (6) 209.
Whieldon brackets and animal motifs, A (8) 269.
Willems, Joseph, designs of, A (7) 243–44.
$ZrO_2$ in, A (10) 341.

**Porcelain earths** and other ceramic raw materials for chemical analyses, A (11) 363.
**Porcelain industry** in Czechoslovakia, technical progress since 1927, A (7) 257.
technical progress with vacuum presses, A (2) 76.
**Pore volume** in branching canal systems, XIX (*c*), A (9) 315.
in compact and coherent materials, XIX (*b*), A (9) 315.
**Porosity** of fire brick, gas-expansion *vs.* liquid-absorption methods for tests, A (3) 103.
**Porous ceramic bodies.** See also *Ceramic bodies.*
gas permeability of, test apparatus, A (2) 77.
manufacture, P (3) 123, P (5) 204.
sintering of mineral substances for, P (7) 259.
solid bodies, composition, P (10) 332.
**Porous products.** See *Clayware, cellular; Clayware, porous.*
**Porous systems,** classification, A (9) 315.
**Pösner equation** for excess air in fuel combustion in annular kilns, A (7) 259.
**Potash** for ceramic ware, use, B (3) 93.
for the glass industry, use, A (10) 326.
in Permian Salt Basin, A (10) 340.
**Potash feldspar,** pure, constituent in microcline, density of, A (1) 36.
**Potash fixation** in soils, nature, A (9) 313–14.
**Potassium** as potassium silver cobaltinitrite, determination, A (1) 43.
**Potassium borate** (penta-), preparation, P (1) 45.
**Potassium bromate** for determination of tin in ores and metallurgical drosses, A (4) 161.
**Potassium chloride** in N. Mex., A (10) 340; from Searles Lake brine, A (10) 340.
**Potassium oxide–$CO_2$–$SiO_2$,** decomposition pressure-temperature diagrams for, A (2) 87; equilibria in, A (5) 202.
**Potassium permanganate,** standard solution of, preservation of, A (6) 233.
**Potassium salts** for ceramic industries, A (10) 340.
**Potassium silicate–$SiO_2$,** equilibrium relations and factors influencing their determination, A (4) 161.
refractive index studies on $K_2O$-$4SiO_2$–$FeO$–$SiO_2$, A (10) 326.
**Potassium sulfate** and alumina, method, P (8) 281.
**Potentiometer,** dew-point, for determining moisture in gases, A (4) 149–50.
portable thermocouple type, A (2) 79.
**Pots, glass:** cast sillimanite for, A (2) 69–70; chemical analysis, A (7) 249; clays in U.S.S.R. and Germany for, A (3) 103; thermal and electric diffusion methods for drying, A (6) 224–25.
locking cover for, P (3) 109.
**Potteries,** British, artistic types, A (8) 269.
Buffalo Pottery, chinaware manufacture at, A (3) 109.
dust-collection process in, A (10) 344.
English, Worcester, history, A (2) 54.
R. Fowler, Ltd., in Australia, A (4) 165.
Newcomb, history, A (8) 269.
Onondaga Pottery Co., engineering methods, A (4) 147.
raw materials in, proportioning methods, A (2) 76.
**Potters,** art, problems, A (10) 323.
**Pottery.** See also *Archeology; Art and artware,* and cross-references.
Abyssinian, Russell Collection, A (4) 130.
in Ariz., handbook of, B (6) 210.
art, of H. W. Austin, A (3) 93.
art, in Iowa, description, A (3) 93.
Canadian Guild of Potters, work of, A (9) 296.
Caolad flint for, A (4) 155–56.
ceramic mass, P (3) 109.
clay for, treatment, P (6) 224; clayworking mixes and firing, A (3) 109.
coating process, P (5) 172.
Commercial Museum for permanent exhibit of, A (3) 122.
in Czechoslovakia, history and types, A (5) 171, A (7) 242.
decoration of, rotary electric kiln for, A (4) 154.
drying plant for, P (5) 194.
early American, at Jamestown, A (3) 93, A (4) 128.
efficient manufacture of, use of engineering methods, A (4) 147.
elementary record from 3000 B.C. to 17th Century, B (9) 297–98.

**Pottery** (*continued*)
English, advice for collectors, A (7) 242.
Anglo-Saxon, decoration, A (4) 128.
at Bristol, A (9) 297.
designs for, B (2) 54.
Lambeth delftware, A (9) 297.
medieval, history of Toby jugs, A (2) 53.
neolithic, A (4) 130.
silver-mounted, A (8) 270.
Staffordshire, showing railway history, A (8) 269.
Romano-British, A (10) 323.
exhibitions at Greater Texas and Pan American Exhibitions, A (3) 122.
formulas, processes, and trade secrets, B (4) 130.
glazed, gold substitute for, P (5) 176.
glazed, in U. S., A (7) 242.
Gordy business, A (11) 367.
in Holland, contemporary artists in, A (6) 209.
Martin ware, history, B (3) 93.
metallized, plastic clays for, A (3) 93; metallizing process, A (10) 332.
in Mexico, A (5) 171.
Nal, examples in Baluchistan, A (5) 171.
neolithic, of Thames Valley, A (6) 210.
N. C. china clay for, deflocculation and controlled separation, A (4) 156.
at Norwood High School (Ohio), A (6) 210.
Paestan, ancient Greek, B (10) 323.
patent design for combined bowl and cover, P (3) 94.
pigments for, materials and compounds for, A (6) 209.
potter's clay, prevention of lime disruptive action in, P (5) 191.
process and installation for making, P (5) 194.
in Sicily, A (1) 4.
stoneware, salt-glazed, history, A (6) 210.
in Sweden, development, A (7) 247–48.
terra sigillata glaze for, P (5) 172.
tulip ware of Pa. Germans, A (5) 172.
**Pottery apparatus** and method of manufacture, P (10) 333.
patent designs, P (1) 31, P (3) 112, P (6) 227, P (9) 309.
potters' jolleys, P (3) 112.
supporting means, P (4) 154.
types, A (1) 26.
**Pottery industry** in Britain, silicosis survey for 1932, A (9) 319.
in Germany, A (3) 122; in 1934, A (3) 109.
in Mexico, A (3) 122.
silicosis in, rept. on, A (9) 318.
**Powder diffraction method** for $Na_2(B_5O_8)$, crystal structure, A (9) 315.
**Powder metallurgy,** process, A (8) 293; tungsten and other refractory metals, A (8) 293.
**Powdered material,** applying apparatus for, P (2) 80.
**Powders,** composition of, method, A (5) 193.
fine abrasive, microprojection and sedimentation methods for size determination, A (5) 169.
mechanical properties: effect of capillary pressure on drying of clay, I; relation of mechanical properties of clay to state of aggregation, II; effect of moisture on mechanical properties of clay paste, III, A (4) 151.
metal: classification, A (11) 360–61; production and test methods, A (11) 360.
metal, copper-lead bearings from, A (1) 28.
specific surface of, Witte's method, A (1) 31.
**Power,** electrical power transmission in brick plants, A (8) 284.
energy data on mineral fuels in U. S., A (7) 259.
hydroelectric, effect on coal industry, A (7) 266.
**Pozzuolana.** See *Cements.*
**Pratt hydrofluoric acid method,** modification for determination of iron oxide in glass, A (1) 11.
**Precipitates,** adsorption of, by iron, aluminum, and chromium hydroxides, I, A (8) 290.
**Precipitators,** electrostatic, European practice in, A (6) 228.
**Pressing apparatus** for molding tile, P (2) 80; for molding shaped ware, P (3) 112.
vacuum presses: for heavy clay industry, A (3) 111; for porcelain industry, A (2) 76.
**Pressure regulator** for fluids, P (5) 194.
**Pressure tests,** snap-bursting, for glass bottles, A (9) 301.
**Printing apparatus** for metal or glass, P (5) 194; see also *Decoration.*
**Profilometer** for surface-roughness measurements, A (7) 240.

**Proteides,** adsorption of: effect of concentration of hydrogen ions on adsorption of hemoglobin by kaolin, A (3) 118; effect of salts, A (6) 232.
**Protyp portable machine** for decorating sheet glass, A (9) 304.
**Przibram's theory** modified for study of kinetics of coloring glass by X-rays, A (1) 12–13.
**Pseudowollastonite** and wollastonite solid solutions with diopside and akermanite, study of systems, A (10) 340–41.
**Psychromatics,** rational, data, A (2) 79.
**Psychrometric chart** for air-conditioning computations, A (4) 152.
construction and use, A (4) 152.
**Psychrometric slide rule** for air-flow problems, A (4) 152.
**Psychrometric tables** for air-vapor mixtures, derivation and use, A (6) 226, A (7) 258.
**Publications,** *Current Titles,* A (3) 123.
National Physical Laboratory abstracts of papers published in 1936, B (5) 204.
subject index to periodicals, 1936, B (4) 166.
**Pukall method** *vs.* Berzelius and Smith methods for alkali determination, A (1) 42; Pukall simplification of J. Lawrence Smith method of alkali determination in silicates, A (10) 342.
**Pulverized bodies,** molten, apparatus for projection, P (10) 336.
**Pulverizing** of materials, tabulated data, A (9) 310–11.
**Pulverizing apparatus.** See also *Mills.*
air-separation and air-drying types, A (10) 335.
jet pulverizer, Micronizer, A (10) 334.
mills, capacity *vs.* grindability, A (9) 310.
pulverizers, efficiency measurements of, A (3) 110–11.
pulverizers, patent designs, P (1) 32, P (4) 153.
pulverizers, performance as affected by coal grindability and other factors, A (4) 154.
swing-hammer pulverizer, A (4) 152.
**Pulverulent materials,** automatic apparatus for delivering predetermined quantities, P (7) 259.
**Pumice stone** for building materials, A (3) 115.
**Pumps,** centrifugal, for sludge and waste water, A (5) 192.
**Putnam clay,** particle size in relation to base exchange and hydration properties of, A (5) 197.
**Putties** for nonrigid joints, A (7) 244–45.
**Pycnometer** for density determinations, A (6) 224.
self-filling, A (5) 193.
for specific gravity of heavy solids, A (9) 311.
**Pyrex-brand glass.** See *Glass.*
**Pyrex capillary manifold** and Orsat apparatus for gas analysis, A (5) 201.
**Pyridine** as reagent for separation of metals, A (6) 234.
**Pyritic schists,** ceramic concentrates in, A (1) 35.
**Pyroelectric separation,** method, A (10) 334.
**Pyrometers,** disappearing-filament type, increase of light transmission by, A (4) 151.
electric, for temperature measurements, A (6) 225.
expansion, applications, A (2) 77.
for iron and iron alloy temperature measurement, A (10) 335.
optical: and thermoelements, checking and gaging of, III, B (3) 101; use, A (2) 78–79.
pyro-optical, direct-reading type, A (3) 111.
radiation type, A (11) 360.
recording and controlling type, A (2) 79.
surface and needle type, A (3) 111.
**Pyrometric cones,** cone deformation study of barium oxide–clay–silica system, A (9) 315.
**Pyrometric equipment,** control of, II, B (3) 101.
**Pyrometry,** radiation, and flame temperatures, equipment, A (4) 152.
and steel-maker's refractories, A (3) 111.
thermocouple of silicon carbide, A (1) 30.
thermoelectric, optical, and radiation, review, A (1) 30.
**Pyrophyllite** in the Alps, A (1) 39.
in ceramic composition, P (8) 283.
for electrical insulator, A (10) 333.
as modification of lazulite, A (1) 38.
in refractories: effect, A (2) 73–74; and refractory cements, development, B (4) 146; in refractory linings, nature and use, A (8) 289.
**Pyrophyllite** (*continued*)
synthetic preparation, A (2) 82.
talc, and ground soapstone, B (11) 365.
and talc in semivitreous bodies, use, A (7) 257.
**Pyrophyllite talc** in N. C., analyses and use, A (5) 198.
**Pyroxenes** crystallized from dry melts of amphiboles, A (3) 116.
**Pyroxmangite,** unit cell and intensity data, A (1) 37.

**Quadrant-chart type nomograph** for clay slip determination, A (4) 162; see also *Research.*
**Quarrying,** hydraulic stripping of stone quarry, A (4) 165.
**Quartz,** adsorption of colloidal iron hydroxide on, I, A (10) 341–42.
birefringence of, in far ultra-violet and Schumann region, A (1) 41.
by-product, effect on froth flotation processes, A (4) 155.
composition, and use of concentrate of, A (2) 82.
crystalline and fused, dispersion, A (4) 161.
crystallographic changes of, and dissociation of metallic oxides, reaction velocity of silicates in powdered mixtures in consequence, A (2) 86.
crystallographic transformation of, relation to thermal expansion of paving tile, A (6) 220.
extraction from barite tailings, A (2) 82.
fibers of, tensile strength and elasticity, A (4) 163–64.
flotation to high concentration, A (11) 360.
free silica in dusts, Knopf method for determination, A (10) 342.
grain size of, relation to properties of hard porcelain, I–II, A (6) 224.
inversion to tridymite, thermal expansion studies on, VI–XII; physical properties of silica brick, XIII–XIV, A (5) 200.
lithium-ion diffusion through, in electric field, A (4) 161.
and metal pieces, welding of, P (7) 251.
Pfahl, for silica brick, A (6) 220.
quartz plates, examination and correction of, cut perpendicular to optical axis, A (4) 161.
or refractory glassware, vacuum-tight seals for current leads into, P (2) 68.
sealing conductors through, P (6) 219.
solubility of, A (7) 262; in hydrofluoboric acid, A (6) 238.
transfusion of, I, A (1) 36.
and transparent fused quartz, thermal conductivity of, A (1) 15.
**Quartz condenser,** low-loss type, V, A (11) 360.
**Quartz-feldspar-kaolin,** resistivity tests, A (2) 76.
**Quartz glass.** See *Glass.*
**Quartz plates** pierced with holes, production, P (7) 251.
**Quartz ware,** joining to surfaces of metal, glass, or ceramic materials, P (5) 183.
**Quartzites,** chemical properties and structure, A (6) 222.
from Ovruch deposits, impurities in, A (1) 21.
silica determination in, method, A (3) 120.
Sioux: and catlinite in Minn., A (10) 338; diaspore in, A (4) 156–57.
**"Qu-Chromatic" mortar** for furnace coatings, A (2) 81.
**Quicklime.** See *Lime.*

**Radiant-tube furnaces.** See *Furnaces, enamel.*
**Radiation,** heat transmission by, equation for, A (10) 336.
**Radiation pressure,** relation of Stefan radiation law, Nernst heat theorem, and Maxwell formula, A (9) 312.
**Radioactive indicators** for tests on chemical resistance of glass, A (2) 60.
**Radiograms.** See *X-ray studies and tests.*
**Radiographs** for silicosis studies, A (11) 368.
**Radiography,** Grenz ray for structure studies, A (6) 224.
symposium on, 1936, B (6) 235.
**Radium,** adsorption by glass, A (6) 214.
**Raman spectra** in glass, studies, A (1) 13.
of topaz, beryl, and calcite, effect of temperature on, A (1) 43.
**Rare-earth salts,** precipitation and $p_H$ studies with glass electrode, A (8) 291.
**Rare earths.** See *Earths.*
**Rattler test** for brick *vs.* service, A (6) 220.
**Rays,** thermic, permeability of, A (4) 139; see also *X-ray studies and tests.*
**Razek-Mulder color analyzer** for Portland cement concrete, B (8) 286.
**Reaction-rate theory** of viscosity, applications, A (7) 249.
**Reagents,** ammonium molybdate, preservation of, A (6) 233.
**Recording apparatus,** types, B (4) 153.
**Recuperators** and regenerators, simplified calculation, A (5) 189.
**Reflectance** and color of recoat enamels, stabilization, B (9) 301.
**Reflectors.** See *Glass, reflectors.*
**Refractive index** of glass: effect of strains, A (9) 304; formula for, III, A (9) 301–302.
**Refractometer,** high-precision, A (4) 150.
**Refractor** of glass, P (2) 68.
**Refractories,** acceptance tests, A (5) 185, A (11) 353.
aggregates, coarse refractive types, grading of, A (3) 103–104.
alkali action on, A (5) 185.
alkali action on: effect of alkali-chloride vapor at 1000°C, VIII, A (2) 69; experiments on vapor action from sodium aluminate and sodium carbonate at various temperatures, IX, A (2) 69.
alkali action on, effect of potassium-chloride vapor at 1000°C, II, A (2) 69.
alkali action on, volatilization from alkali-impregnated refractories at 1000° and 1100°C, III, A (2) 69.
alumina, high content of, VI–VII, A (1) 19; A (2) 71, A (2) 72, A (5) 186.
alumina and silica, physicochemical principles for manufacture and tests, A (10) 329.
alumina, technical properties, VII, A (1) 19; high-alumina masses, A (2) 71.
alumina, use in cement industry, A (1) 22.
alumina grains, bonded, P (1) 25.
alumina production at Dnieper plant, A (2) 73.
Al-silicate material, composition, P (7) 255.
aluminous, high-grade, in Italy, A (8) 280.
aluminous, technological properties, A (2) 72.
A.S.T.M. Comm. C-8 test methods, review, A (3) 106; A.S.T.M. standards, manual on, B (2) 75.
analysis, A (3) 103.
andalusite-corundum bodies, studies, A (5) 186.
application, A (6) 222.
basic, for induction furnace linings, A (10) 329.
basic composition, P (6) 223; batch composition, P (3) 107.
beryllium oxide for, melting points of, A (8) 289.
for boiler combustion chambers, stability limits, A (10) 331.
for boilers, A (9) 307; effect of coal ash, A (5) 186; properties, A (5) 186, A (5) 187; see also *Boilers; Refractories for furnaces.*
bonding agents for, ethyl-silicate solutions, A (2) 69.
brick, alumina cement and corundum, production, P (9) 308.
brick, patents, P (1) 25, P (7) 255.
calcium orthosilicate type, P (3) 106.
calcium silicate in, effect on silica brick, A (1) 20.
Canadian fire clay for, new spalling test, A (1) 20.
carbon-containing materials, refractoriness of, A (1) 19.
carbon monoxide in, action of: in laboratory-prepared specimens, III; deposition of carbon on ferruginous substances, IV, A (7) 253.
cartography for production of raw materials, A (9) 313.
cast: core for mold for, P (1) 24; crystalline, production, P (5) 189; Monofrax types, A (4) 145, A (5) 187.
casting-pit types, A (4) 142.
cellular fire brick, process, P (9) 308; see also hollow, lightweight, and porous types in *Refractories.*
cements. See also *Cements, refractory.*
cement bonds for, silicic acid ester solutions for, A (4) 131.
Duralite for, A (3) 105.
"Gitempite," for coke ovens, A (6) 221.
for glass furnaces, P (5) 190.
high-temperature, laboratory tests, A (1) 19.
hydraulic, detailed data, I–III, A (3) 131–32.
for patching, P (2) 75.
ceramic material, composition, P (5) 189.
checker brick: alumina-silica, from glass-tank regenerators, study, A (3) 105; for furnace regenerators, P (5) 189.

**Refractories** (*continued*)
checker brick for open-hearth furnaces, properties, A (1) 21.
checker brick, spherical, for hot stoves, A (10) 331.
checker tile for regenerative furnaces, A (5) 187–88.
checkerwork, P (4) 146, P (5) 189.
chemical composition of, effect of carbon separation according to reaction $2CO \rightleftarrows CO_2 + C$, A (2) 71.
chillproof, production, P (8) 282.
chrome, and soapstone for lining smelter furnaces, A (10) 331; see also *Refractories, magnesite.*
chrome-magnesia, P (6) 223.
chrome-magnesite: composite, A (10) 330; for open-hearth steel furnaces, A (5) 188.
chrome-magnesite brick: composition tests, A (5) 188; refractoriness-under-load test, A (4) 144.
chrome ore, ground, for steel furnaces, A (6) 222.
chrome ore: process, P (5) 190; use, A (10) 329–30.
chrome-ore brick, review of patents, A (2) 70.
chrome-ore raw materials, A (5) 186.
chromite, with chromite base, physical properties of, A (1) 21.
and chrome-magnesite, production process and properties of, A (2) 70.
and magnesite, Italian production of, A (4) 143.
materials for, data on, A (1) 18.
petrography and heat treatment of, B (1) 24.
in silica brick, effect of, A (1) 22.
spinel binder for, A (5) 189.
*ciment fondu* in, effect of addition to, A (2) 72; see also *Cements, ciment fondu.*
classification of: as to slag erosion, B (1) 24; types, uses, and costs, A (1) 22.
clay-bonded silica, in segmental horizontal retorts, A (2) 70.
clays for. See *Clays, refractory; Refractories, raw materials,* and specific refractories materials throughout index.
composite body, P (9) 308.
composition, P (8) 282, P (9) 309; and process, P (1) 24–25, P (5) 189.
compound, with high grog content, A (1) 18–19.
compression of, resistance tests, A (1) 22.
concrete, types, and studies, A (9) 308.
concrete masonry, hydraulic bond in, *ciment fondu*, A (7) 253; use of hydraulic cements in, I–II, A (11) 357.
construction materials for, data, B (9) 308.
Corhart tank blocks, A (2) 71.
corundum and chromite ore for fireproof brick or linings, P (9) 308–309.
corundum, Haglund process, A (2) 73.
corundum crystals in, composition, P (1) 25.
crucibles, molding apparatus, P (10) 332; molding process, P (9) 309; and rods and tubing, pure oxides in, A (1) 20; see also *Crucibles.*
crystalline alumina and bentonite bond, P (9) 309.
crystalline cast, production, P (5) 189.
crystals buried in vitreous gangue, P (5) 190.
cupola fire brick, A (10) 330; cupola linings, effect of fluxes, A (10) 330; cupolas, silica firestone for, A (9) 308.
de-aired fireclay brick for regenerator service, A (4) 144.
Debye-Scherrer pattern studies, A (4) 146.
defects in. See also *Refractories, spalling.*
coal-ash reaction as cause of coke-oven wall failures, A (11) 354.
colored spots in silica brick, A (1) 18.
cracks, brittleness, and waviness, causes of, A (5) 185; prevention, A (11) 353.
failures listed, A (10) 331.
nodes and cords, effect of surface tension of slag glass, A (5) 176–77.
deformation, elastic and plastic, of fireclay brick in flexure at 1220°C, A (1) 19.
dense body, method, P (9) 309.
diaspore in, data, A (9) 307.
diatomaceous, thermal conductivity tests, A (5) 188.
diatomaceous earth for, hard firing of, P (1) 24.
diatomite and Thermalite brick for insulation, A (5) 195.
dolomite for brick, blocks, etc., P (4) 146.
calcining temperature of, relation with heat evolved by interaction of calcined product with water, A (1) 22.

**Refractories, dolomite** (*continued*)
and chrome iron ore for, P (7) 255.
clinkered, for steel furnaces, A (1) 19.
data, A (11) 356.
firing calculations in shaft furnace, A (1) 18.
pressed brick for open-hearth furnace, A (8) 281.
relation between calcining temperature of, and quantity of heat evolved by interaction of calcined product with water, A (1) 22.
drying methods, A (1) 28.
dry-mixing process, A (11) 359.
durability studies, A (6) 221.
Duralite, as plastic cement for hot-patching, A (3) 105.
electrically fused magnesia, A (7) 253.
expansion tests, I–II, A (3) 104–105.
ferrochrome slag in, A (7) 253.
in ferrous metallurgy, application, A (11) 356.
ferruginous siliceous type, P (5) 189.
ferruginous substances in, carbon deposition on, IV, A (7) 253.
firebrick (fireclay brick), after-contraction test, A (5) 185.
apparatus for porosity tests by gas expansion, A (3) 103.
control of clay selection, B (11) 357.
deformation and Young's modulus of, in flexure at 1220°C, A (1) 19.
effect of fluxes on underload strength of, A (5) 186, A (8) 280.
insulating, for incinerators, A (3) 104.
physicochemical changes during use in coke ovens, A (8) 281.
requirements and cause of defects, A (5) 185; acceptance tests, A (11) 353.
spalling studies, A (3) 105.
tests at high temperatures under increasing load, V, A (2) 74.
thermal-shock resistance of, relation to impact bending strength of ceramic bodies and glasses, A (11) 354.
water working and process of use, A (9) 307.
fireclay ladle sleeves, studies, A (6) 221.
fireproof: blocks for glass trough furnaces or for handling molten glass, P (11) 357–58.
brick or linings, corundum and chromite ore for, P (9) 308–309.
for fireproof and abrasive uses, composition, P (7) 255.
masses, molding process, P (5) 190.
Schnabel-Bone process, A (5) 187.
firestone, structure, A (4) 143.
Fletton brick, heat transmission studies, A (10) 330.
fluxes in, effect on underload strength of fire clay, A (5) 186, A (8) 280.
forsterite: in America; in Europe, A (10) 331; mineralogy of, A (2) 72–73.
forsterite brick for steel furnaces, A (10) 331.
forsterite-periclase brick, development, A (10) 330.
for foundries: alkali action on, tests, A (5) 185; semiacid grogless type for casting pipes, A (1) 22; silicon carbide scrap for, A (11) 346; see also *Foundries; Refractories for furnaces; Refractories for steel production.*
at Foundry Trades' Exhibition, Olympia, types, A (11) 354–55.
for furnaces. See also *Foundries; Refractories for foundries; Refractories for steel production.*
acid open-hearth: and Bessemer, characteristics, A (1) 19; rugged types, A (11) 355.
annular kiln, studies, A (7) 260.
arch and refractory block, P (10) 332; arch and wall construction, P (3) 106.
basic open-hearth processes, I–IV, A (10) 329; types, A (11) 355.
blast-: changes and destruction of brick in service, A (8) 280; selection, A (6) 222; standardization and characteristics, A (10) 331; wall protection, A (7) 254.
block, structure, P (8) 282.
boilers: composition for monolithic linings, A (7) 253; slag action in, A (4) 142; see also *Boilers; Refractories for boilers.*
brick, P (5) 189.
by-product coke ovens, cooling and reheating process, A (10) 330.
cast Fe blocks with chromite lining, A (6) 220–21.
ceramic patching cement, P (2) 75.

**Refractories for furnaces** (*continued*)
checker brick for open-hearth, properties, A (1) 21.
coke chambers, effect of coke gas and water steam on, A (6) 221.
coke-oven walls, failure by coal-ash reaction, A (11) 354.
and coke ovens: concretes for, A (4) 144–45; foreign materials for, A (6) 221; physicochemical changes of fire brick in, A (8) 281.
construction patent, P (10) 332.
"cracking" heaters, data, A (6) 221.
crucible melting, mullite and sillimanite for inner rammed linings, A (11) 354.
cupola linings, effect of fluxes, A (10) 330.
"Detred" arch for combustion chambers, A (3) 105–106.
electric: effect of molten aluminum on firebrick lining, A (2) 71–72; and Siemens-Martin crowns, improved silica brick for, A (1) 18; slagging of walls, A (2) 71–72; special types, A (1) 22.
electric resistance, support for brick roofs, P (6) 223.
electric smelting, for phosphate, A (9) 308.
enamel muffles and muffle furnaces, A (7) 254.
Exhibit at Foundry Trades' Exhibition, A (11) 354–55.
firebridges for solid fuel burning, P (6) 223.
flue structure, P (3) 107.
foundry, insulation data, B (10) 331; see also *Refractories for foundries.*
heat-treatment data, A (11) 356.
high-temperature, brick coated with Fe oxide for, P (8) 281.
hot-face insulation, A (1) 19.
improvements for ceramic kilns, A (1) 34.
induction: linings for, A (10) 329; low-frequency, silica-alumina linings for, A (11) 354.
induction type, P (3) 112.
industrial heating, mechanical supports for, A (4) 143.
insulating panel for open hearths, A (10) 330.
insulating types, A (4) 142–43; see also *Refractories, insulating.*
insulation for backing walls and roofs, A (10) 329.
iron-blast: types of brick for, A (1) 21–22; discussion, A (10) 330.
lightweight, for linings, A (1) 20.
for linings: composition, P (6) 223, P (7) 255; fireproof brick with high alumina content, P (10) 332; insulating fire brick for, A (11) 354.
linings, fuel-oil ash action on, A (8) 280.
linings for hot-zone of kilns, types, A (5) 188.
linings for melting nonferrous metals, A (8) 281.
for metal melting, nature and use, A (3) 105.
metallurgical furnace masonry, P (5) 189.
mold core for cast refractories, P (1) 24.
open-hearth: basic *vs.* silica brick, A (3) 105; cement, and high-temperature, steel-encased magnesite brick for, A (3) 104; porous magnesite brick for, A (6) 222; pressed dolomite brick for, A (8) 281; siemensite for, A (5) 188–89; silica brick for, A (7) 254–55.
open-hearth, heat data, A (1) 23.
open-hearth, slag removal from slag pockets in single block, A (6) 222.
open-hearth, special types in Europe and America, A (4) 145; for 1926–1937, A (4) 145.
open-hearth insulation, A (1) 20.
open-hearth steel: chrome-magnesite brick in, A (5) 188; roof, silica brick for, relation between structure and life of, A (5) 188; discussion, A (11) 356.
patching interior surfaces, P (10) 332.
power boiler type, A (2) 74.
practical tests on refractory mixes, A (1) 21.
pyrophyllite for linings, A (8) 289.
ramming materials, A (10) 331.
regenerative, checker brick for, A (5) 187–88.
roofing brick, P (5) 189; for roofs and arches, P (9) 308.
rotating, calcining cement or lime, linings for, P (10) 332.
semiacid, CO-resistant, A (2) 71.
service handbook on, B (3) 106.

**Refractories** for furnaces (*continued*)
shaft, P (1) 25.
Siemens-Martin crowns, thermally stable brick for, A (1) 23; Siemens-Martin tests with unfired brick M-50, A (1) 23.
silica brick for lining insulation, A (8) 280.
slag-tap boilers, data, A (1) 22–23.
smelter linings, chrome and soapstone for, A (10) 331.
soaking, linings for, A (11) 356.
spalling resistance of magnesite brick, A (2) 72.
spherical checker brick, A (10) 331.
steel: chrome-magnesite brick, A (11) 356; dolomite brick, A (11) 356; ground chrome ore for, A (6) 222; ladles, types, A (11) 355; magnesite brick, A (11) 355; silica brick, A (11) 355; stopper sleeves and nozzles, guide tubes, and runner brick, A (11) 355; see also *Refractories for steel production*.
for suspended arches and walls, P (4) 154; suspended roofs, brick units for, P (6) 223.
tests on used silica brick from open-hearth furnace roofs, A (4) 146.
tile or brick for, P (8) 282.
wall blocks, retaining means, P (6) 223.
walling-up boilers and chambers for firing with coal dust, A (7) 255.
walls, P (3) 107, P (4) 146, P (5) 189, P (6) 223; walls and arches in double end-fired naphtha and re-forming furnace, A (10) 330.
zinc muffles, native clays and silicon carbide for, A (6) 222.
fused, process, P (6) 223, P (8) 281.
fused alumina and silicon carbide panel brick for muffle shell, A (7) 254.
fused magnesia in, A (7) 253.
fused mixture of alumina and silicon dioxide, P (10) 332.
fused mullite: production, A (11) 354; for protection against fuel-oil ash, A (9) 290; see also *Refractories, mullite*.
for gas retorts in England, A (4) 144.
gases in: effect of ethylene on, IV; effect of coal gas on, V, A (2) 71.
Ga. kaolin for, A (1) 36–37.
glass blocks for troughs, composition, P (11) 357.
for glassmelting furnaces, behavior of tank brick at glass surface during dissolving, A (2) 60, A (4) 136.
blocks for shaping watch glasses, A (1) 13.
brick for roof, treatment, P (5) 189.
characteristics, A (3) 103; composition, P (8) 282.
checker brick, blue-green intensive deposits on, A (7) 247.
drying process, A (5) 186.
glass tank, A (9) 307.
with high grog content, A (1) 21.
linings for tank furnaces, chemical analysis, A (7) 249.
magnesia brick for, A (5) 187.
porosity *vs.* permeability for tank blocks in, A (9) 308.
refractory clay with Rh or Rh-Pt alloy, P (11) 352.
review of types and properties, A (11) 354.
slagging process above melt, I, A (5) 176–77.
surface tension of slag glass on tendency to form nodes and cords, effect, II, A (5) 176–77.
tank blocks: permeability *vs.* porosity, A (9) 308; tests, A (5) 189.
tanks, mullite, sillimanite, or corundum brick for, A (5) 187.
grog, for compound types, A (1) 18–19.
with constant gas permeability, A (1) 20.
effect of grinding fineness on, A (6) 221.
mullite bond for, A (11) 354.
for steel casting ladles, A (6) 222.
unfired refractory quartz grog brick, A (1) 23.
use, A (11) 353.
grog bodies, resistance to molten glass attack, A (5) 188.
grog brick: semidry method, at low-fired temperature, A (1) 18; shaping methods, A (2) 71.
grog ware, shrinkage tests, conditions for heating products for, A (2) 70.
grogless: semiacid, for steel casting pipes, A (1) 22; unfired, tests, A (1) 23.
heat conductivity tests, summary of, A (2) 71.

**Refractories** (*continued*)
heat loss on basis of heat capacity of, reanalysis, A (4) 143.
heat-treating, review for 1937, A (6) 222.
high-alumina: with diaspore base, A (9) 307; for electric smelting furnaces, A (9) 308.
high-alumina: studies on coarse-grained andalusite bodies, VI, A (1) 19; technical properties of high-alumina bodies, VII, A (1) 19; tests, A (2) 71.
high-grog, mullite bond for, A (11) 354.
high-temperature: characteristics, A (11) 354; composition, P (3) 107; serviceability, A (2) 71.
hollow, heat conductivity, method for, A (9) 307; see also cellular, lightweight, and porous types under *Refractories*.
hydraulic: concrete for, A (6) 222; development, A (4) 143.
hydrocarbon gases in, effect, I, A (8) 280.
improvements and developments in 1936–1937, A (4) 145.
insulating, P (9) 309.
for backing up, I–II, A (10) 329.
brick with calcined firebrick base, A (9) 307.
concrete blocks for annealing furnaces, A (3) 105.
encased in sheet metal, thermal conductivity of, A (8) 281.
fire brick for furnace lining, A (11) 354.
for foundry furnaces, B (10) 331.
heat and sound material, P (4) 146.
heat conservation by use of, A (4) 143.
heat-insulating slabs, P (8) 281.
high-temperature materials, P (3) 107.
lightweight production, A (9) 307.
manufacture and physical properties, A (2) 72; physical and chemical properties, A (1) 19.
"massless" type, A (4) 145.
for open-hearth operation, A (1) 20, A (10) 333; for open hearths and blast furnaces, A (11) 353.
properties and application, A (1) 19, A (2) 72; tests and properties, A (4) 145, A (8) 281.
reanalysis of heat loss on basis of heat capacity, A (4) 143.
silica brick for, A (8) 280.
of soaking pits, A (1) 19–20.
thermal conductivity coefficients of, A (8) 281; thermal conductivity measurements for, A (5) 188, A (7) 254; thermal conductivity measurement by "Touchau" (contact) method, A (6) 222.
types, A (1) 21, A (2) 74–75, A (4) 142–43; types and use, economy of, A (11) 356.
from vermiculite, A (1) 23.
for iron and steel industry, new types, A (1) 22; see also *Refractories for steel production*.
kaolin, aluminum hydroxide, and silica, heat of reaction of calcium hydroxide with, A (2) 85.
kyanite, alkali content, A (9) 307.
kyanite-clay mixtures, expansion characteristics when heated, A (11) 354.
kyanite schist for, in Kola Peninsula, A (7) 262.
for ladles. See *Ladles*.
lightweight: composition and properties, A (1) 20; for furnace linings, A (1) 20; lightweight mineral material, manufacture, P (8) 281; see also cellular and porous types under *Refractories*.
lime-resistant, P (5) 189.
for linings and walls. See *Refractories for furnaces*.
load-bearing properties, test method, A (5) 187.
magnesia, electrically fused, A (7) 253; magnesia brick, production, A (5) 187, P (6) 223, P (9) 308.
magnesite (magnesite brick), auxiliary constituents of, study, A (3) 104.
and chrome-magnesite brick, properties, A (3) 105.
composition, P (5) 190.
drying theory, A (6) 222.
*vs.* grog for spouts for steel plants, A (5) 189.
heat-resistant, data, A (5) 186.
microstructure and technological properties (U.S.S.R.), A (2) 72.
modulus of elasticity of: importance of tests and apparatus, I, A (2) 73; auxiliary constituents, II, A (3) 103; room temperature tests and relation of porosity to elasticity, III, A (3) 104; elasticity tests at high temperatures, IV, A (2) 73.

**Refractories, magnesite** (*continued*)
sintering process, II, A (2) 74; III, A (11) 356–57.
spalling resistance, A (2) 72.
steel-encased, A (3) 104.
studies, B (4) 146.
thermally stable, A (1) 23.
Ural Mt. deposits, A (5) 186.
water-vapor treating method, A (8) 281.
magnesite-chromite brick, unfired, composition, A (1) 23.
magnesite grains in, composition, P (1) 25.
magnesite-talc rock from Sudan for, A (10) 330.
magnesitic brick, manufacture in Canada, A (9) 307–308.
magnesium oxide: and calcium carbonate production, P (10) 332; process, P (1) 24, P (11) 357.
magnesium silicates for, tests, A (1) 23.
magnetite for, use, A (1) 21.
manufacture, P (2) 75, P (3) 107, P (9) 309, P (11) 358; and properties, A (5) 185, A (6) 222.
masonry, hydraulic bond in, *ciment fondu*, A (7) 253.
mechanical properties of refractory materials, A (3) 104; high-temperature tests, A (2) 70.
melting points: of raw materials for, A (5) 187; tabular data, A (3) 105.
merwinite, composition and use, A (4) 145.
metal oxides for, P (5) 190.
metal part for contact with molten glass, P (4) 141.
Metalkase brick for iron and steel production, A (1) 22.
for metallurgical use, B (1) 24.
Mg orthosilicate and sintered MgO, process, P (5) 190.
MgO, CaO, and $SiO_2$, production, P (1) 24–25.
mixes for, practical tests, A (1) 21.
moisture content in, distillation method, A (5) 200.
molded: chillproof (magnesital), P (8) 282; composition mixture for, P (8) 282; and dried, with water-glass binder, P (2) 75; fireproof masses, composition, P (5) 190.
molded body, with SiC grains and bentonite, P (9) 309.
Monofrax cast types, A (4) 145, A (5) 187.
mortars, A (2) 74; coating and ramming materials for foundry use, B (7) 255; mechanical properties, A (2) 74; observations and formulas, A (7) 254; "Qu-Chromatic," for furnaces, A (2) 81.
muffles, zinc, clays and silicon carbide for, A (6) 222–23.
mullite, fused, production, A (11) 354; for protection against fuel-oil ash, A (8) 280.
mullite, production, P (6) 223, P (8) 281; in Russia, A (11) 357; see also *Mullite*.
mullite bond for grog brick, A (11) 354.
mullite brick for regenerator packing, A (2) 69.
mullite crystals in, composition, P (1) 25.
notes on, A (7) 254.
nozzle, effect on teeming speeds of ingots, A (2) 72.
olivine in America; in Europe, A (10) 331; olivine (dunite), preparation, A (2) 73; olivine block, Wash. tests, A (4) 145.
one-component crystalline phase of alumina for, P (1) 25.
oxide-flux additions in, effect on strength, A (5) 186, A (8) 280.
oxides for, melting points of, A (5) 187; pure oxides in high melting-point types, A (1) 20.
physical and chemical compositions for coke chambers, A (6) 221.
physical and mechanical properties of apparatus for and control of, A (2) 74; physicochemical principles for manufacture and tests, A (10) 329.
plastic, and processes, P (8) 282.
plastic brick, blocks, slabs, tile, etc., P (8) 282.
porosity of, process, A (2) 70.
porous, process, P (7) 255, P (8) 282; porous magnesite products, A (6) 222; see also cellular, hollow, and lightweight types under *Refractories*.
powdered or granular minerals for, binding agent for, P (5) 190.
powdered glass with sintered or fused MgO, P (11) 358.
power-press process, dust removal in, A (9) 308.
pulverized metal oxides for, P (5) 190.
pyrometric resistance of, effect of conductivity on internal heating, A (4) 143.

**Refractories** (*continued*)
pyrophyllite in, properties of, A (2) 73–74; and refractory cements, B (4) 146.
quartzite, process, P (5) 190; effect of grain size of sands on, A (5) 185.
Radex, Japanese, Veitsch, comparative modulus of elasticity, tests, IV, A (2) 73.
radiation properties of silicoalumina types, A (6) 222.
ramming materials, requisites, A (10) 331.
raw materials for: Chasov-Yar clay and kyanite for fused mullite, A (7) 253; deposits in France, A (5) 186; in Italy, silica and alumina for, A (8) 281.
raw materials for: recent products and test methods, A (3) 103; unified tests on, A (7) 255.
refractoriness of, effect of alumina and titania in clays, A (8) 280.
refractoriness of carbon-containing materials, A (1) 19.
refractoriness determination, continuous cryptol furnace for, A (2) 70.
refractoriness-under-load test, A (9) 308; behavior of fire brick at high temperatures under increasing load, V, A (2) 74; for chrome-magnesite brick, A (4) 144.
refractory glasses, P (3) 102.
refractory types, requirements, A (3) 105.
for regenerators. See *Regenerators.*
research to increase use, A (11) 353; review of progress and future development, A (3) 105; review of technique and manufacture, A (4) 144; science and practice in manufacture, A (2) 89.
for retorts. See *Retorts.*
Ritex process: for chrome brick, A (1) 22; for magnesite nozzles, A (10) 331.
ruby-glass formations on worn-out refractory block, A (6) 217.
runner brick, A (11) 355.
sagger: relation of clay and grog in, A (5) 187; tests on sagger presses and molds, I; friction press for tests, II, A (3) 104; thermal resistance of sagger mixes, A (3) 106; see also *Saggers.*
sagger mixes, clay and grog relationship in, A (5) 187; effect of highly refractory additions, A (7) 253; discussion, A (11) 356.
secondary expansion in clays for, B (8) 281.
semiacid, CO-resistant type, A (2) 71.
semidry method for grog brick, A (1) 18.
serpentine in, process, P (5) 190; serpentine ores in (Germany), A (2) 74; serpentine rocks for, A (8) 289.
siallite-alites, use, A (1) 23.
siemensite for basic open-hearth furnace, A (5) 188–89.
Sikarbid, in Czechoslovakia, A (7) 254.
silica, manufacture and uses (Australia), A (2) 72; South African materials for, A (4) 145.
silica and siliceous bodies, for construction materials, B (9) 308.
silica brick, accelerated firing and cooling to improve quality, A (1) 18.
addition of coarse-grained sand, A (5) 185.
with chromite, effect, A (1) 22.
coherence and molding tests, A (1) 28.
colored spots in, A (1) 18.
crystalline quartzites for, A (1) 21.
for insulation linings, A (8) 280.
inter-reaction between lime and quartzite powder, A (1) 20.
mechanical strength tests, A (6) 222.
in Nova Scotia, A (11) 354.
for open-hearth steel furnace roof, relation between structure and life, A (5) 188, A (11) 356.
permanent expansion of, standard test methods, I, A (3) 104; "permanent expansion-under-load," tests, II, A (3) 105.
petrographic studies for, A (7) 254.
Pfahl quartz for, A (6) 220.
physical properties, XIII–XIV, A (5) 200; properties, A (7) 254–55; review, A (8) 281.
porous, ethyl-silicate preparations to increase abrasion resistance, A (4) 131.
power-pressed, A (4) 144.
quality of, comparison of methods for, A (1) 18.
raw materials for, in South Africa, A (5) 187.
slag-action tests, I, A (2) 69.
Tarasov sandstone for, A (6) 222.
tridymitization of, A (2) 75.
silica firestone: composition, A (1) 22; for cupolas, A (9) 308.
**Refractories** (*continued*)
siliceous, production, P (3) 107; siliceous particles and barium ferrite in, P (5) 180.
silicoalumina, radiation properties, A (6) 222.
silicoaluminous: deformation at high temperature, A (4) 143; determination of softening temperatures under load at high temperatures, A (7) 254.
silicon carbide. See also *Silicon carbide.*
brick for enamel furnaces, A (7) 254.
grains and bentonite for molded body, P (9) 309.
physical properties, A (1) 21.
process for use, A (2) 74.
Sikarbid composition in Czechoslovakia, A (7) 254.
silicon-carbide heaters, A (1) 20.
sillimanite for slip cast pots, A (2) 69–70.
sillimanite brick: grading, porosity, and air permeability tests, A (3) 103; of high porosity, properties, III, A (2) 71.
sintered dolomite, manufacture, P (9) 309.
sintered magnesite, sintering process, II, A (2) 74; sintering process in magnesite containing unevenly distributed constituents, III, A (11) 356–57.
from sintered oxides, methods to increase high temperatures in, A (2) 72.
slag action of $CaO–Al_2O_3–SiO_2$ slags, I, A (2) 69.
slag action of western Pa. coals on different types of, B (1) 24.
slag attack on, A (8) 280.
slag-erosion test, A (2) 69; slagging test for, development, A (8) 280.
spalling of: definition and studies on fireclay brick, A (3) 105; new type of thermal shock test, A (1) 20; prevention in open-hearth furnaces, A (1) 23.
spalling resistance and texture, relation, A (4) 145; spalling-resistant, production, P (1) 24.
spalling tendency and mechanical properties of materials for, A (3) 104.
special, physicochemical principles for tests, A (10) 329.
special types for steel plants, improvements in manufacture and use, A (4) 144.
special types and tests methods, A (3) 103.
specifications for, danger of recommendation, A (11) 356.
Spinella: chrome-magnesite brick, A (4) 145; for furnaces, A (11) 354–55.
for steel production (steel plants). See also *Foundries; Refractories for foundries; Refractories for furnaces; Steel industry.*
casting: ladles and linings with high grog content, A (6) 222; spouts and plugs, improved quality, A (1) 19.
casting-pit types, A (4) 142.
costs, A (11) 355.
ferrous metallurgy, problems, A (11) 356.
for foundry, A (8) 281.
and iron industry, Turkish, A (8) 280.
magnesite-bonded chrome brick, superduty types, vacuum-pressed brick, and insulating brick for, A (4) 144.
magnesite spouts *vs.* grog spouts, A (5) 189.
nozzles and stoppers, properties, A (3) 104.
open-hearth symposium, A (11) 355.
raw materials for, and tests, A (4) 144.
runner brick, A (11) 355.
steel worker and pyrometry, A (3) 111.
types listed, A (1) 22, A (4) 145, A (10) 331; improvements, A (4) 144.
super-refractory materials, A (2) 74; artificial claylike state of, A (1) 18.
for surface combustion burners, P (9) 309.
synthetic corundum, P (8) 282.
tank blocks. See *Refractories for glass-melting furnaces.*
test methods: incipient softening according to Italian and German methods, III, A (4) 143.
texture of, importance, A (11) 353; texture *vs.* spalling resistance, relation, A (4) 145.
thermal conductivity of materials for, A (3) 106; measurements, A (5) 189.
Thomasite: calcium ferrite-bonded magnesia refractory, A (4) 145; clinkered dolomite for steel furnaces, A (1) 19.
torsion behavior at different temperatures: modification to apparatus (A); ultimate strength of kaolin and kaolin-quartz mixtures (B) III, A (5) 186.
trends, developments, and uses in U. S., A (6) 223.
tridymite silica brick from crystalline quartzites, A (2) 75.
**Refractories** (*continued*)
tunnel kiln for firing refractory brick, A (1) 34.
unfired, M-50, tests, A (1) 23.
unfired, refractory quartz grog brick, use, A (1) 23.
unfired grogless, tests, A (1) 23.
Univ. of Sheffield, need for studies at, A (10) 329.
vacuum-pressed brick for blast-furnace linings, A (4) 144.
vacuum pressing of, method, A (9) 308.
for walls and linings. See *Refractories for furnaces.*
wet-ground mixes for super-refractories, A (1) 18.
X-ray survey, A (4) 146.
zircon raw materials for, A (1) 23.
zirconium compounds for, A (10) 341.
zirconium oxide, baddeleyite for, A (11) 354.
Zonolite, A (7) 254.
**Refractories industry** in Italy, A (4) 143.
**Refractories plants,** Canadian Refractories, Ltd., open-pit and underground mining at, A (1) 46.
$SiO_2$ dust in, prevention, A (4) 165.
**Refrigerators,** enamel adherence to steel for, tests, A (2) 57.
improved cabinet design for reduced enamel chipping, A (1) 8.
materials-handling system in warehouse for, A (2) 58.
**Regenerators,** checkerwork for, A (11) 355.
furnace, P (1) 24; checker brick assemblies for, P (5) 189.
glass-tank, alumina-silica checker brick for, study, A (3) 105; of modern glass tanks, refractories for, A (11) 354.
packing for, brick of artificial agglomerated mullite for, A (2) 69.
soaking-pit, improved insulation for, A (1) 20.
**Reingold equation** for relation between heat of combustion, flame temperature, and specific heat of combustion products, A (11) 361.
**Research and research laboratories,** alignment charts for recurring calculations, B (1) 45, A (11) 359.
application of scientific method to industry, data, P (9) 319.
Armco, A (8) 292.
Brown-Firth, B (7) 249.
budget and accounting procedure, A (9) 318.
Bureau of Standards tests on permeability of masonry walls, A (8) 279.
chemical, microanalysis in, A (4) 162.
*vs.* chemical plant construction, relation, A (6) 238.
coöperation of research worker and plant man in coking and refractories, A (10) 330.
density, concept and physical magnitudes related to, A (11) 367.
distribution dissimilarities, measurement, A (11) 366.
dust tests in laboratories, A (8) 293.
on elements, qualitative and quantitative detection, A (4) 163.
experimental data: No. 42; the moving average, use and interpretation, No. 43; short time fluctuations, elimination, No. 44; use of coefficient of correlation for studies for long periods, No. 45, A (1) 46; lag factor, significance, No. 46; coefficient of association and contingency, No. 47; coefficient of mean square contingency, No. 48; determination and checking of frequencies, Nos. 49–50, A (4) 160.
experimental data, tables, graphs, and charts, for industrial operations, A (8) 293.
Experimental Institute for Silicate Industry at Brno, 1936 rept., A (7) 266.
fluorescence, for glaze, mineral, slag, and firing studies, A (4) 159–60.
Franklin Inst., A (7) 265.
fundamental: human value of, A (3) 122; importance, B (4) 166.
fused silica for laboratory equipment, A (2) 62.
Geophysical Lab.: coke-oven study, A (10) 330; studies on silicates, A (1) 39.
German state technical school for glass processes, A (8) 273, A (9) 297.
glass porous filter, A (8) 274.
Good Housekeeping Inst., for porcelain enamel tests, A (8) 272.
graphs and calculations in ceramics, B (7) 234.

**Research and research laboratories** (*continued*)
high-frequency technique, review of literature, A (11) 365.
high-temperature laboratory kiln for, A (1) 33.
industrial, high-temperature apparatus for, A (4) 151.
industrial, spectrum-analytical studies for, A (4) 163.
Institute of Vitreous Enamellers, work of, A (10) 325.
isograph, mechanical root-finder, A (4) 150; mechanism of, A (4) 151.
Karcite for equipment in, A (4) 165.
lightning-stroke phenomena, tests, A (4) 147.
mass production of science, A (4) 162.
Mellon Inst., scientific contribution, A (10) 343.
Mellor, for clay industry, A (6) 238.
in metallurgy, electron diffraction studies for, A (4) 161.
microanalytical methods, A (2) 85.
models, atomic packing, of silicate structures, A (5) 199.
Natl. Paving Brick Assn. Research Bureau rept., A (6) 220.
Natl. Physical Lab.: Abstracts and Annual Rept., B (5) 204; heat-insulating materials tests, A (8) 293.
nomographic chart with slide rule for chemical engineering calculations, A (5) 202.
nondestructive materials tests, X-ray shadow pictures *vs.* magnetic tests, A (11) 365.
Ontario Research Foundation, work and purpose, A (9) 318.
operating data for ceramic manufacturers, B (9) 319.
in plastic materials, data, A (9) 319.
Porcelain Enamel Inst., activities, A (10) 324.
rational psychromatics, A (2) 79.
science in American program for social progress, A (10) 344.
scientific knowledge in service of ceramic industry, A (5) 197.
statistical methods applied to industrial standardization and quality control, B (1) 47.
statistics, measurement of dissimilarities of distribution, A (11) 366.
Technical Laboratory of Aichi Prefecture (Jap.), sagger presses and molds, tests, I; friction press for, II, A (3) 104.
in technological education, forecast, A (10) 344.
TVA in ceramic research, A (2) 89.
for tests on ores and minerals, B (8) 294.
thermal units, conversion tables for, A (3) 118.
U. S. Bur. Mines: coal hydrogenation studies, A (5) 195; Petroleum Expt. Sta., A (10) 337.
X-rays and gamma rays, industrial application, A (1) 45.
Zurich Inst. of Research, tile tests, A (7) 255.
**Resins,** grease-lubricated artificial, and metal bearings, comparative tests, A (4) 149.
**Resistors.** See also *Heating elements.*
ceramic Silit resistance for electrical furnace, A (2) 80.
graphite, sealing process, P (1) 34.
silicon-carbide, contact phenomena in, A (2) 80.
**"Resol" rosins,** corundum, clay, and Portland cement for ceramic bond, A (8) 267.
**Respirators.** See *Dust apparatus.*
**Retorts,** continuous vertical brick type for low-temperature carbonizing, B (3) 114.
cost and use in England, A (4) 144.
segmental horizontal type, clay-bonded silica refractories for, A (2) 70.
**Reynold's number** and viscosity of fluids, relation, A (4) 164.
**"Rhodian" decoration** of Near East pottery, A (8) 270.
**Rhodonite,** natural, unit cell and intensity data, A (1) 37.
**Richards method** for calcium and magnesium oxide determination, A (1) 42.
**Richardson, W. D.,** A (9) 318.
**Riebeckite** in quartz veins, Ontario, A (5) 198.
**Riposta electric furnace** for firing of decorations on porcelain and glass, A (3) 112.
**Rock-drill lubrication** in quarry and mining service, A (4) 152.
**Rock wool.** See *Insulating materials.*
**Rocks.** See also *Minerals; Ores; Petrography; Sandstone; Shales.*
chemical processes and formation, A (9) 314.
**Rocks** (*continued*)
ferrous oxide in, determination, A (1) 42.
fused, valuation of raw materials for (U.S.S.R.), A (1) 15.
geometrical analysis of, integrating micrometer for, A (1) 29.
igneous, descriptive petrography of, IV, B (8) 290.
lime-silica, change of physical properties by sodium silicate solutions, A (6) 219.
mineralogical and physical properties, dust danger in, A (4) 165.
and minerals, specific gravity, rapid micromethod for, A (9) 311.
serpentine, for refractories, A (8) 289.
silicate: copper, zinc, and lead in, determination, A (5) 199; Schucht and Möller method for silica determination, A (9) 316; silica determination, A (2) 84.
sources of: anthophyllite-cordierite granulites of Cornwall, A (3) 114.
clayey, origin near Confolens (Charente), A (7) 262.
granitic, heavy minerals in, of Yosemite region, A (5) 196.
lapis lazuli in Calif., A (5) 196.
magnesite-talc, in Sudan, for refractories, A (10) 330.
and ores of Bulgaria, A (5) 197.
volcanic, in Colo., petrologic studies of minerals from, A (10) 340.
volcanic, corrosion resistance to liquid acids, A (1) 39.
weathering of: studies, A (6) 231, A (9) 315; ice as agent of, A (2) 82.
wonderstone, analysis, B (3) 117.
**Roofing materials.** See also *Tile.*
brick, blue smoking of, A (2) 75.
clay shingles, method and machine for, P (6) 223.
color-coating of roofing shingles, process, P (9) 309.
colored granules, method, P (9) 319.
glass, P (5) 183.
glazed, P (5) 183, P (9) 305.
pressed roof tile, A (7) 256.
production, B (7) 256.
tile, P (1) 25, P (2) 76, P (4) 146, P (10) 332.
tile, driers for, A (5) 193, A (7) 257.
tile, glazing, engobing, and "smoking" of, A (5) 190.
**Rotating cylinder method** *vs.* capillary viscometer for viscosity of suspensions of glass spheres, VIII, A (8) 285–86.
**Roth formula** for calorific fuel values, A (6) 228.
**Ruby glass.** See *Glass, colored; Glass, ruby.*
**Ruheman camera** for low-temperature X-ray studies, A (2) 77–78.
**Russia** (U.S.S.R.), copper industry, A (10) 339; glass industry, A (9) 304.
**Ruth equations** for filtration tests, A (10) 334.
**Rutile** in Brazil, data, B (2) 83; in S. Australia, A (9) 314.
**Rutile bodies** for insulation, studies, A (6) 223.

**Safety.** See also *Diseases (industrial); Management.*
fire protection and resistance of building materials, A (3) 122.
in grinding wheel maintenance, A (3) 92.
health protection of wage earners, effect, A (9) 318.
industrial, Willson products for, U. S. Bur. Mines approved types, B (7) 258–59.
liability of employers, A (7) 265–66.
in mines, air conditioning for, B (8) 294.
in mines (Bur. Mines Repts.), B (8) 294.
in mines and plants, effect of first-aid training at, B (1) 47.
mortality curve study of brick-on-concrete pavements in Iowa, 1909–1928, A (9) 307.
press accidents reduced in die design, A (1) 30.
prevention of accidents and occupational diseases, A (6) 237.
weight lifting by industrial workers, relation to accidents, B (9) 319.
**Saggers.** See also *Refractories, sagger.*
clay and grog in, quantitative relation, A (5) 187.
effect of size on firing costs and kiln space, A (1) 33.
presses and molds for, Jap. studies, I–II, A (3) 104.
refractory additions in, studies, A (7) 253.
**Salinometer,** electrical, for estimating salts in water and salt solutions, A (1) 30.
**Salt domes,** ceramic deposits of, A (8) 289.
**Salt-glazed stoneware.** See *Stoneware.*
**Samian ware** (terra sigillata), misuse of "Samian," A (5) 171–72.
**Sampling** of coal, variables in, A (11) 362.
sample splitter, P (10) 336.
**Sandblasting.** See also *Cleaning of metals.*
*vs.* airless shot-blasting, A (10) 333.
*vs.* Schoop's method for plating porcelain insulators, A (3) 109.
and shotblasting of metals, A (1) 9.
of stove castings, rubber for, A (1) 30.
for vitreous enamel process, A (10) 325.
**Sandblasting apparatus,** P (4) 153; boron carbide for, A (3) 97; compressed air for, A (1) 28.
**Sanding apparatus,** automatic, A (11) 352.
patent design, P (5) 171.
and polishing apparatus, P (5) 171.
sanding attachment for brick machines, A (7) 252.
sanding wheel, P (4) 128.
**Sandpapers.** See *Abrasives, sandpapers.*
**Sands,** chemical sand-washing plant, A (4) 156.
coarse-grained quartz, for refractories, A (5) 185.
deferrizing and classification for abrasive use, wind-tunnel apparatus for, A (1) 31.
dry, viscosity measurements, A (8) 285.
foundry, Boswell classification, A (11) 348.
foundry, compressed air for conveying and compressing, A (1) 28.
foundry, dedusting for reuse, A (8) 272.
glacial, and gravel deposits, geology, A (9) 313.
glass, of Ala., A (10) 339.
maximum grain size, A (5) 179.
on Pacific coast, A (4) 157.
physical and chemical properties, A (8) 288.
purification method, P (8) 278; on commercial scale, A (9) 304.
types and specifications, A (5) 178–79.
wet and dry concentration methods, A (10) 334.
iron determination in, A (1) 43.
mica separation from, process, A (10) 334.
molding: molding, clay washer, automatic type, A (10) 334.
Doty method for tests, A (6) 217.
evaporating water with burning alcohol for determination of, A (7) 264.
mixing, and classification, A (2) 57.
naturally bonded or synthetic types, data, A (11) 348–49.
for steel foundries in Calif., A (4) 157.
quartz, magnetic separation, A (1) 29.
sand mulling machine, P (7) 259.
for sandblasting, dust tests, A (2) 89.
silica, for assay crucible bodies, A (9) 308.
synthetic molding: chemical composition, I, A (4) 135; classification, II, A (4) 136.
unconsolidated, selection of screen openings for, A (4) 152.
washing and grading apparatus for, P (3) 112.
**Sandstone** in Mo. flint clay pit, A (10) 341.
for silica brick, use, A (6) 222.
**Sanitary ware,** bathroom accessories, standard colors for, A (1) 26.
bathtubs, atmosphere furnace for annealing of, A (6) 212.
Briggs steel, atmospheric furnace for annealing, A (7) 245.
conversion into vapor bath, P (11) 349
enameled development, A (2) 58.
pressed steel *vs.* cast iron, A (1) 9.
pressed steel, history of enameled sanitary ware, A (2) 57–58.
production, P (6) 214.
sheet-metal base *vs.* cast iron, A (1) 9.
casting slip for hygienic ceramics, A (10) 332.
enameled, method for, P (5) 176.
enameled iron wash fountains, A (1) 8; enameled stamped sheet iron, advantages, A (2) 58.
lavatories, sinks, wash basins, etc., method and apparatus for, P (11) 361.
patent designs for: closet bowl, P (9) 309.
for combination soap holder and grab rail, P (11) 347.
defecator, P (5) 191.
drinking fountain, P (2) 54.
enameled bathtub, P (9) 301.
enameled sinks, P (9) 301.
fixing and securing lavatory basins and holders for toilet articles to walls, P (10) 333.
flush bowl, P (7) 257.
sanitary basin, P (7) 257; sanitary lavatory, P (7) 257.
sheet-metal bathtub, P (9) 301.
sink, P (11) 349.
siphon breaking water closet, P (9) 309
ventilated toilet bowl, P (9) 309.
water closet, P (2) 77, P (11) 359.

**Sanitary ware** (*continued*)
pottery clays *vs.* washed kaolin, composition, A (10) 332.
production in Berlin, history, A (2) 77; in Germany, types and properties, A (11) 357.
unicast method and gas-fired kilns for, A (4) 147.
vitreous china for, properties, A (3) 108.
**Scheelite** in southern Rhodesia, A (9) 315.
**Scheering-Kahlbaum silica** for tests on reaction velocity of silicates, A (2) 86.
**Schläpfer and Bukowski ethylene glycol method** for determination of uncombined lime in Portland cement, A (5) 200.
**Schmidt electrolytic separation** of lead for lead-poisoning tests, A (11) 359.
**Schnabel-Bone process** for increase in density of raw ceramic materials, A (5) 187.
**Schneider's studies** on shrinkage of porous geometrical bodies, A (3) 122.
**Schoop method** for plating porcelain insulators, A (3) 109; for spraying aluminum on preheated glass surfaces, A (4) 137.
**Schott GG-3 glass** for filtering light, A (6) 216.
**Schucht and Möller method** for potentiometric titration of silica, A (9) 316.
**Schuttes formula** for calorific values of fuels, A (6) 228.
**Science.** See also *Research.*
and practice in heavy ceramics, A (2) 89.
scientific experts as leaders in, A (2) 89.
*vs.* social progress, A (10) 344.
**Scrap material,** SiC, from grinding wheels for foundry refractories, A (11) 346.
**Scratch hardness methods.** See *Hardness.*
**Screens** (screening apparatus). See also *Grain size; Sieves.*
Selectro vibrating, A (3) 111.
stainless steel, for 65-mesh grinding in closed circuit, A (8) 285.
types, P (1) 32.
vibrating, low-head horizontal type, A (3) 110; vibratory, P (8) 286, P (10) 336.
**Scum** on brick and terra cotta, cause and cure, A (4) 142.
**Séailles process** *vs.* Bayer process for alumina production, A (5) 185.
**Sedgwick-Rafter counting cells** with Greenburg-Smith impinger for dust counts, A (9) 310.
**Sedimentation,** automatic control in tests on, A (2) 77.
method: for measuring size of fine powders, A (5) 169; for particle measurement, A (10) 335.
Rept. of Comm. on, 1936–37, B (7) 263.
specific thickness of suspension in, photocells for analysis, A (8) 285.
tests, evaluation, A (5) 193.
**Sedimentation apparatus,** P (5) 195.
**Sedimentograph** for fineness of substances in suspension, A (8) 285.
**Selectro vibrating screen,** A (3) 111.
**Selenates** and tellurates, basic, formula for, A (7) 263.
**Selenium** for decolorizing glass, A (8) 276.
microchemical test for, A (5) 201.
quantitative determination, A (6) 233–34.
separation from Cd, Pb, Bi, Sb, Mo, W, and V, A (2) 86.
and tellurium in Ont., recovery, A (11) 364.
volumetric determination, Norris and Fay method for, A (5) 202.
**Selenium pink** for coloring glass and use of rare earths, A (5) 172.
**Separating apparatus** (separators). See also *Classifying apparatus.*
for air-flotation separation, P (2) 79.
for coal, P (2) 79.
cyclone type, for solid particles and gases, P (5) 194.
for dry separation of materials of different densities, P (3) 112.
for dust and gases, P (1) 31.
electromagnetic separator for quartz sands, A (1) 29.
electrostatic, for solid separations, A (10) 334.
flue-gas, European practice in, A (6) 228.
Frantz isodynamic magnetic separator, A (11) 364.
high-intensity magnetic separator, A (3) 110.
magnetic separators, P (3) 112; for industrial minerals, A (11) 364; principles and equipment, A (10) 335; for removing iron from liquid enamels, A (2) 57.
and method, for gravel separation, P (4) 153.
mineral separator, P (5) 199.
**Separation** of materials of different densities, dry process, P (3) 112.
**Sepiolite,** characteristics and formula, A (9) 313.
**Sericite** in S. Africa, A (9) 314.
**Serpentine,** minerals of, physical data, A (9) 313.
**Serpentine ores** in refractories, A (2) 74.
**Sessile-drop method** for surface tension and density measurements of viscous liquids at high temperatures, I, A (7) 249.
**Setit** for sheet-iron ground coat, effect, A (9) 300–301.
**Severite** in France, data, A (4) 158.
**Sewer pipe.** See *Pipes; Stoneware.*
**Shales,** carbonaceous, for cementitious material, P (4) 133; oil-shale strata in Scotland, A (6) 230; see also *Clays.*
**Shelvador cabinets,** finishing in Crosley plant, A (6) 213.
**Siallite-alites** for refractories, use, A (1) 23.
**Siderolithic sediments** as origin of clayey rocks near Confolens (Charente), A (7) 262.
**Siemensite** for basic open-hearth furnace, A (5) 188–89.
**"Sieve kneader"** for clay preparation, A (11) 360.
**Sieve method** for particle measurement, A (10) 335.
**Sieves.** See also *Screens.*
for abrasive granulation test, A (3) 91.
sieving analysis, precise method, A (10) 335.
vibratory, P (2) 80.
**Sifters,** gyratory, supporting means, P (10) 336.
**"Sigillata,"** use of term, A (5) 171–72.
**Silica.** See also *Glass; Refractories.*
and alumina in glass, relation, A (7) 246.
amorphous: fluorine determination in, A (2) 84; precipitated, preparation, P (6) 235.
by-product, market for, A (4) 155.
in clays, Finn-Klekotka method for, A (3) 120.
coherence and molding of, A (1) 28.
colorimetric determination in corundum, A (4) 160.
Columbia River hydroelectric power for mining, B (6) 238.
crystals of, two-dimensional types, A (11) 366.
in enamels, chemistry of, A (5) 174.
in fluorine, colorimetric determination, A (1) 41.
fused, permeability in extreme ultra-violet range, A (4) 162.
fused, for special types of apparatus, A (2) 62.
in gaseous form, transfer of, A (11) 366.
in glass batches, preparation, P (4) 141.
in lime solutions, colorimetric determination, A (8) 291.
minerals, corrosion resistance to liquid acids, A (1) 39.
nonporous, production, P (7) 251, P (9) 306.
purification process, P (8) 278.
in quartzites, quantitative determination by hydrofluoric acid evaporation, A (3) 120.
rapid method for determination in aluminate solution, A (1) 43.
in silicate rocks, Schucht and Möller method for potentiometric titration, A (9) 316.
and silicate solubilities, studies, A (6) 238.
vitreous, specific heats of, A (8) 272.
**Silica dusts,** solubility of, tabular data, A (9) 319.
**Silica firestone** for refractories, properties and use, A (1) 22.
**Silica gels,** lime adsorption on, A (3) 118; solutes in, distribution, A (7) 264.
**Silica-magnesia-alumina,** diagram for tests on talc-kaolin line, A (3) 109.
**Silica masses** (mixes), shaping capacity of, tests, A (6) 217.
**Silica rock,** firestone, structure, A (4) 143.
**Silica ware,** vitreous translucent nonporous type, production, P (6) 219.
**Silicalite** from bauxite, synthetic production, A (8) 290.
**Silicate chemistry,** Geophysical Lab. studies, A (1) 39.
**Silicate melts** with fluorine, zone formation in, A (6) 232; "osmotic pressure" of, A (1) 44.
**Silicate minerals** and rocks, rationalization of analysis, A (2) 86.
**Silicate ores,** treating process, P (11) 367.
**Silicate rocks,** copper, zinc, and lead in, determination, A (5) 199; silica determination, A (2) 84.
**Silicate of soda** for grinding wheel bond, A (8) 267.
**Silicate surface coatings,** P (1) 48.
**Silicate–water systems,** "osmotic pressure" of silicate melts, A (1) 44; water solubility in albite melt, A (3) 116.
**Silicates,** alkali aluminum, validity of Hüttig's equation for permutites, VIII, A (2) 84.
alkali determination of, Pukall simplification of J. Lawrence Smith method, A (10) 342.
alkali estimation in, A (10) 342.
alkali subsilicates, process, P (2) 87, P (5) 164.
alkalis in, Pukall method for determination, A (1) 42.
aluminum, iron, and titanium in, accelerated determination, A (4) 159.
aluminum oxide in, direct determination, A (5) 200.
anhydrous water-soluble, preparation, P (5) 202–203.
atomic packing models of, A (5) 199.
bicalcium, analysis, A (8) 291.
calcium, and calcium aluminates, reactions with water, A (2) 55.
chemical studies: behavior of enstatite ($MgSiO_3$) toward fused chlorides of bivalent metals, VI; magnesium metasilicate formed in thermal decomposition of talc, VII, A (6) 232.
coherent porous zirconium types, production, P (2) 87.
complex, of magnesium, calcium, strontium, and barium, composition, preparation, and chemical behavior, A (8) 289.
dicalcium: solid, reaction of, A (1) 5–6; and tricalcium, hydration of, A (3) 94.
dicalcium and tricalcium, structure studies, II, A (2) 55–56.
double silicates of zirconium, method of making, P (11) 367.
Experimental Inst. for, at Brno, 1936-rept., A (7) 266.
formation of, thermochemical data, A (6) 234.
fused, viscosity apparatus for, A (9) 311.
and glasses, infra-red spectrum and structure, A (4) 138.
iron content in, $K_2Cr_2O_7$ for determination, A (3) 121.
iron and manganese in, determination from one sample, A (2) 84.
iron-manganese, iron melts, and solid silica, effect of impurities on reactions between, A (6) 233.
microanalysis, A (5) 201.
natural: classification, I–II, A (5) 196; constitution and classification, A (1) 36.
pneumatolytic synthesis, A (1) 39; pneumatolytic and hydrothermal alteration and synthesis, A (1) 39.
in powdered mixtures, reaction velocity, A (2) 86.
quartz in, Knopf method, A (10) 342.
of rare earths, crystal chemistry of simple types, A (1) 41–42.
reduction of silicate inclusions in steel by aluminum, A (4) 135.
relation to phosphates and arsenates, A (1) 39.
and sodium aluminates, solutions of, interaction of, A (4) 162.
sodium polysilicates, production, P (2) 88.
and sulfides, relations between, A (11) 366.
**Siliceous fibers** (glass fibers), forming of, P (6) 218; method and apparatus for, P (6) 219.
**Silichrome glass electrode** for differential titration, A (11) 360.
**Silicic acid** and boric acid, qualitative test, A (3) 120–21.
comparative observations on determination in soluble materials, A (5) 199.
effect on magnetic properties of dissociated mixtures with iron oxide, A (2) 85.
fused, and quartzose glass, for heat-resistant enamels, P (6) 213–14.
model of polymerized molecule in melt, A (1) 43–44.
**Silicification phenomena** in Turkey, A (1) 36.
**Silicon** in cast iron, steel, and silicates, determination, A (2) 85.
$K\alpha_{1,2}$ doublet of, effect of chemical binding on, A (2) 85.
melting point, A (10) 342.
oxyhalide compounds of, A (11) 366.
and pentavalent arsenic, crystal types of, isomorphism of, A (2) 82.
production process, P (7) 242.
**Silicon alloys,** occurrence of siliconis in, A (6) 237.
**Silicon carbide.** See also *Abrasives; Refractories, silicon-carbide.*

**Silicon carbide** (*continued*)
in refractories, application to, A (2) 74.
for semiconductor resistors, studies, A (2) 80.
for thermocouples, A (1) 30.
ultrafilters of, A (1) 44.
and zirconium oxycarbide, preparation, P (5) 203.
**Silicon-carbide resistors.** See *Resistors.*
**Silicon pentoxide,** free two-dimensional crystals of, A (5) 200.
**Silicosis** (pneumonokoniosis). See also *Dust apparatus; Dusts.*
aluminum as aid for reduction of, A (1) 46, A (5) 204.
in American industry, B (3) 123.
chemical examination of dusts, A (9) 317–18; chemical observations, A (11) 367.
crystalline siliceous minerals in silicotic lungs, X-ray diffraction method for, A (8) 294.
diagnosis of, factors in, A (11) 367.
ergometer and recording spirometer for tests, A (4) 165.
geochemistry applied to problems of, A (2) 88.
in Germany, increase of accident insurance in occupational diseases, A (11) 367–68.
lead dangers in, and factory precautions, A (7) 265.
in manufacture of silicon alloys, A (6) 237.
metallic aluminum for prevention, A (5) 204.
mineral substances as cause, A (1) 47.
in mining, control of, A (8) 293.
Natl. Conference on, summary for 1937, B (6) 238.
in N. Y., list of dust control equipment, A (8) 293.
physical aspects, A (4) 165.
in plating industry, A (8) 293.
portable X-ray apparatus for detection, A (3) 122.
in pottery manufacture, causes, A (2) 89; rept. on, A (9) 318.
in pottery workers, rept. on, A (9) 318.
prevention methods, A (10) 334.
proposed state regulation, A (3) 122.
protection methods, B (7) 266.
protector minerals defeat harmful effect of silica dust, A (3) 122.
quartz dust studies in human lung tissues, A (6) 237–38.
radiographic studies of dust excretions from lungs, A (11) 368.
radiological demonstration of pathological changes in industrial processes, A (11) 368.
research on, results, B (7) 266.
respirator for prevention, A (9) 311.
review of effects of breathing dusts, B (4) 166.
in sandblasters, A (2) 89.
symposium on, B (9) 319.
Wis. compensation acts, A (10) 344.
**Silicotitanium,** composition, A (4) 162.
**Silit resistance** for electrical furnace, A (2) 80.
**Silk-screen printing.** See *Decoration, glass.*
**Sillimanite** and mullite, review and studies, A (1) 44; see also *Refractories, sillimanite.*
**Silver** in glass, diffusion of, A (3) 99.
**Sintered ceramic materials,** composition, P (1) 26.
**Sintered magnesite.** See *Magnesite.*
**Sintering** of cement, plant for, P (9) 299.
glass, for glass apparatus manufacture, A (2) 63.
of mineral substances for porous products, P (7) 259.
process for magnesite, II, A (2) 74; III, A (11) 356–57.
**Sintering properties** of powdered (waste) glass, A (6) 237.
**Sintering system** for granular materials with different flow rates, P (2) 80.
**Slag inclusions,** grinding method for preparation of specimens, A (5) 169.
**Slag systems,** FeO–$Al_2O_3$ and FeO–MnO–$Al_2O_3$, studies, A (5) 202.
**Slagging** of glass furnaces above the melt, studies, I–II, A (5) 176–77.
**Slagging test** for refractories, development, A (8) 280.
**Slags,** acid-soluble, MgO determination in, A (4) 161.
action of, from boiler-furnace fuels, A (4) 142.
alkali-rich, for foundries, tests, A (5) 185.
analysis, A (1) 41.
blast-furnace, as base for cements, colloidal study of, A (2) 55.
cast paving block from, A (6) 219.
cementitious substance from, P (10) 324.
**Slags,** blast furnace (*continued*)
for glass production, A (6) 214.
high-alumina, production process, A (2) 70–71.
relative desulfurizing power of, II, A (8) 292.
viscosity studies, A (6) 234–35.
calcium aluminate, composition of charge in smelting of, A (2) 55.
coal: attack on refractory brick, A (8) 280; temperature-viscosity relationships of, test methods and results, I; firing techniques, II, A (5) 202.
ferrochrome, in refractories, A (7) 253.
flow characteristics of, comment on Barrett and Taylor method, A (7) 247.
fundamentals of slag action, CaO–$Al_2O_3$–$SiO_2$ types, A (2) 69.
fusibility of, relation to FeO–CaO–$SiO_2$ system, A (5) 202.
glass-furnace, *vs.* pyrolusite for yellow-green glass, A (8) 276.
hydraulicity of, A (3) 95.
open-hearth, analysis, A (9) 315.
and ores, zinc oxide production from, A (6) 231.
rhythmic crystallization, A (4) 162.
Siemens-Martin, viscosity, A (1) 45.
silicate, iron and manganese determination in, A (2) 84.
in single block, removal from open-hearth furnaces, A (6) 222.
in $SiO_2$–CaO–FeO systems, viscosity studies, A (11) 366.
slag constituents, photographic and spectrographic study of colors in, A (6) 233.
viscosity of, temperature range in, A (5) 202.
viscosity determination of slag systems, A (9) 311.
zinc-bearing, fusibility in system FeO–CaO–ZnO–$SiO_2$, A (6) 232–33.
**Slate debris,** Ballachulish, waste in, use, A (6) 229.
**Slate waste,** German use, A (3) 122.
**"Slip"** for ceramic glazing, P (4) 167.
**Slip-velocity formula,** completion, A (2) 84.
**Slips,** alkaline, use of casting scrap in, A (4) 147.
alkaline casting, theories and test, I, A (4) 146–47.
bone-china, protective colloids in, A (4) 147.
casting rate and tensile strength of cast for, A (4) 147.
clay: liquefaction and temporary thickening, A (1) 37–38; quadrant-chart nomograph for, A (4) 162; studies on casting properties and thixotropy, A (1) 37–38.
enamel, and glazes, micrometer for measurement, A (6) 226.
fluidity of, effect of $SiO_2/Na_2O$ ratio in silicates on, A (4) 147.
screening of, and cobalt stain in, A (1) 26.
water elimination in, by filtration analysis, A (5) 191.
**Slurry,** mineral, treatment of, as cement slurry, P (9) 312.
silica, and cement, vibration viscosimetry for, A (8) 285.
**Smelting** of calcium aluminate slags, composition of charge in, A (2) 55.
**Smelting apparatus,** P (1) 10.
**Smith Alloy No. 10,** data, A (1) 30.
**Smoke.** See also *Dusts.*
abatement, B (10) 337.
and dusts in air, electrostatic precipitation, A (2) 89.
photoelectric smoke penetrometer, A (1) 29–30.
smoke emission in the clay industry, A (5) 196.
**Sobotiste ware** in Czechoslovakia, A (5) 171.
**Soda ash,** dense, manufacture, P (10) 343.
in iron casting, A (6) 213.
**Sodium,** tetrametaphosphate of, transformation of, A (10) 343.
**Sodium aluminate** and silicate solutions, interaction, A (4) 162.
solid, production, P (10) 343.
**Sodium borate,** preparation, P (1) 45.
**Sodium borate** (tetra)–$B_2O_3$, softening interval limit of, A (4) 160–61.
**Sodium carbonate,** reactions with ferric oxide and alumina, A (2) 86.
**Sodium dichromate,** preparation, P (6) 236.
**Sodium hydroxide** and alumina, treatment, P (5) 170.
**Sodium ion,** direct determination of, A (3) 118.
**Sodium-line reversal method** *vs.* platinum-wire method for measuring open flame temperatures, A (11) 362.
**Sodium metaborate,** crystal structure, A (9) 315.
**Sodium metasilicate-water,** phase equilibria studies from 90°C to ice point, A (6) 234.
**Sodium nitrate** and arsenic trioxide in glass, behavior, A (4) 136.
**Sodium oxide**–$SiO_2$–$CO_2$, decomposition pressure-temperature diagrams for, A (2) 87.
**Sodium silicate** for cements, A (7) 244.
**Sodium silicate** (meta-)–$PbSiO_3$–$SiO_2$, equilibrium diagram of, A (1) 43.
**Sodium silicate adhesives,** P (5) 203.
**Soils.** See also *Colloids; Earths; Minerals; Rocks; Sands.*
alcoholate index for study of, A (1) 43.
base exchange in soil separates and soil fractions (sand and silt), A (1) 35.
calcareous, replaceable bases in, studies, A (8) 288.
Calif. clay minerals of, A (11) 363.
clay separate of, mechanical and mineralogical subdivision of, A (4) 157.
clays or colloids in, sensitive hydrometer for measurements of small amounts, A (1) 30, A (8) 285; high degree of accuracy obtained by use, A (2) 78.
colloidal behavior of, laws of: neutral salt effect and amphoteric points of soils, XX, A (1) 43.
electrodialysis of: speed of electrodialysis of various cations, III, A (8) 291.
ferrous iron in soil solutions, determination of, A (9) 316.
heating of, effect upon exchange capacity, A (5) 200.
HCl extracts of, base-exchange phenomena of, A (9) 314.
iron reduction in, by citrate and 2:2'-dipyridyl, A (9) 316.
Md., effect of hydrogen peroxide treatments on exchange capacity, A (1) 37.
mechanical analysis of, historical review, A (5) 196; mechanical and mineralogical analysis of, process, A (4) 157.
mica-like minerals in, A (8) 289.
mineral, in Russia, A (3) 116.
moisture in, evaporating water with burning alcohol for determination of, A (7) 264.
moisture meter for, A (6) 231.
nature and properties, B (1) 40.
potash fixation in, nature of, A (9) 313–14.
"single value" properties relation between sticky point and nature of exchangeable ions in the soil, A (6) 231.
soil acidoids, titration curves and dissociation constants of, A (9) 314–15.
soil humus, estimate by oxidation with alkaline permanganate, I, A (2) 83; potentiometric study of humic acid and humates formation, II, A (8) 290.
soil profiles, genetic, X-ray diffraction studies of two-micron fractions of, A (1) 40.
stabilization of, adsorption phenomena in, A (9) 313.
tropical, increase of acidity with depth, A (6) 231.
varying conditions in, HCl action on, review of studies and method, A (9) 312.
**Solid phase,** diffusion and chemical reaction in, B (8) 292.
**Solid solutions,** latent energy of, theoretical study, A (1) 44.
**Solid state,** reactions in: course of reactions, XII, A (3) 120; reactions between barium carbonate and ferric oxide in presence of oxygen, I, A (10) 342–43.
**Solids** (solid bodies), air-drying process, A (10) 333.
diffusion theory, A (6) 234, A (11) 366.
drying, XVI–XXV, A (5) 193.
electrostatic separations of, A (10) 334.
grainlike structure, A (4) 161.
heavy, pycnometric method for specific gravity tests, A (9) 311.
and liquids, wetting characteristics, A (10) 335–36.
melting and plastic deformation theory, A (6) 234; diffusion theory, A (11) 366.
melting theory and plastic deformation of, A (6) 234.
porous: composition, P (10) 332; volumenometric methods for, A (11) 367.
reactivity of, B (4) 164.
semiplastic, simplified quinhydrone electrode for *p*H determination, A (10) 335.
in suspension, classification, P (10) 336.
**Soluble materials,** silicic acid in, methods for determination, A (5) 199.
**Soluble salts** and base-exchange compounds, chemical equilibrium between, A (8) 288.
in soils and irrigation waters, electrical salinometer for, A (1) 30.
source, A (2) 81.
**Solutes** in silica gel, distribution of, A (7) 264.

**Solutions** and suspensions, viscosity of, VIII, A (8) 285.
**Sonic flocculator** as fume settler, B (11) 365.
**Sound-velocity method** for specific heat of gases at high temperatures: carbon dioxide, II, A (7) 259; carbon monoxide, I, A (8) 287.
**Spalling** of refractories. See *Refractories, spalling of.*
**Spark plugs.** See *Porcelain.*
**Spark spectrograph** for cast-iron chemical analyses, A (7) 245.
**Specific heat** of carbon dioxide, sound-velocity method for, A (7) 259.
**Specific gravity,** apparatus for approximate determination, A (10) 333.
**Specifications.** See *Standards.*
**Spectrochemical analysis,** quantitative, with microphotometer, A (9) 317.
**Spectrographic analysis** on ancient glass, Chinese types, A (4) 139; Egyptian glass of 18th dynasty, cobalt content of, A (7) 249.
of glass, (1) 41.
review and data in Navy, A (6) 234.
for study of colors of slag constituents, A (6) 233.
useful accessories for, A (4) 162.
**Spectrographs,** Bragg oscillating type, for clay mineral study, A (1) 37.
Hilger medium quartz, for ultra-violet light transmission of sheet glass, A (11) 351–52.
for industrial control, use and limitations, A (1) 31.
for iron foundry analyses, A (8) 285.
practical possibilities in, A (1) 44.
spark, for chemical analysis of cast iron, A (7) 245–46.
Zeiss quartz type "Q 24" for determination of beryllium in bauxites, A (6) 229.
**Spectrometers,** rock salt and quartz types, for infra-red and ultra-violet measurements on glass, A (11) 350–51.
**Spectrophotometer,** Kunig-Martens, for spectral absorption of glasses, A (10) 326–27.
**Spectrophotometric curves,** calculator for tristimulus values from, A (3) 110.
**Spectrophotometric method** for determining iron in ores, A (8) 292.
**Spectroscopic thermodynamics,** A (9) 312.
**Spectroscopy,** theoretic, development and use, A (5) 201.
**Spectrum,** high-frequency, of mercury vapor, A (3) 118.
**Spectrum analysis,** band spectra, structure, A (3) 119.
with carbon arc cathode layer (*Glimmschicht*), B (10) 341.
for glass and raw material tests, A (6) 217.
history and discussion, A (4) 163.
for industrial laboratories, A (4) 163.
**Spekker photometer** for ultra-violet light transmission of sheet glass, A (11) 351–52.
**Spilite,** reaction studies, A (10) 339.
**Spinel** as binder for chromite refractories, A (5) 189.
from Ceylon, data, A (9) 313.
formation from $ZnO + Cr_2O_3$, solid state reactions in, A (3) 120.
Mg–Al, crystal structure of, with $Al_2O_3$ surplus and γ-alumina, A (2) 70.
synthetic: manufacture and production, P (6) 235; Verneuil fusion process for, P (9) 317.
**Spodumene,** alteration to kaolinite, A (1) 35.
beneficiation by decrepitation, B (4) 159.
sources of: in Maine and Mass., A (10) 339; in N. C., A (4) 158.
**Spot sensitivity method** for optical or heavy crystal glass, chemical resistance, A (6) 214.
**Spot tests,** cadmium, A (5) 199.
**Spray-drying** and solvent recovery system, P (2) 80.
**Spray head,** patent design, P (10) 336.
**Spraying,** air-pressure nozzle for engobe coating of brick, P (11) 361.
automatic: for porcelain enameling, A (2) 56; of vitreous enamel slip, A (8) 272.
of enamels, Hydro-Filter spray booth, A (6) 213.
of enamels, review, A (1) 7.
of glass for silver coating, P (3) 102.
metal, fundamentals and application, A (6) 226.
of porcelain insulators, Schoop method, A (3) 109.
spray painting in pattern making, A (11) 360.
**Spraying** (*continued*)
of stainless steel on hot oil pump plungers, A (10) 334.
water mist, for dust control in blasting, B (7) 258.
**Spraying apparatus,** Aerograph machine for glass decoration, A (11) 350.
atomizer type, P (2) 79.
for fusing and spraying pulverized materials, P (5) 175.
for powder, P (9) 312.
spray booth, P (8) 286; spray booth for glass decoration, P (7) 251.
spray gun, P (6) 227.
**Sprechsaal yearbook,** 1937, B (4) 166.
**Spun glass.** See *Insulating materials, glass.*
**Standards** (specifications), American Society for Mechanical Engineers, changes in, A (7) 265.
American Society for Testing Materials: coal classification by rank and grade, A (8) 287; Comm. Repts. and tentative standards, 1937, B (7) 266; proposed method for coal testing, tumbler and drop-shatter tests, A (4) 154; refractories, manual of, B (2) 75; tentative, 1937, for cementitious, ceramic, concrete, and masonry materials, B (5) 204.
for brick, tests and regulations, A (7) 252.
cement, Swiss, data, A (10) 324.
for ceramic facing tile in Czechoslovakia, A (7) 255.
chemical stoneware, test methods, Brit. Stand. Specif., A (7) 256.
colors for kitchen accessories, A (1) 10.
Comm. Rept. on, American Ceramic Society, A (5) 204.
glass, laboratory types, French specifications, A (9) 305.
glass, lead, in Czechoslovakia, A (8) 275.
glass, proposed for laminated and toughened types, A (4) 139.
glass rods, thermal-endurance test (proposed) based on use of, A (4) 139.
industrial standardization and quality control, use of statistical methods, B (1) 47.
portable chemical fire extinguishers, Brit. Stand. Specif., A (1) 31.
salt-glazed fireclay pipes, Brit. Stand. Specif., A (1) 25.
sampling and analysis of coal and coke, Brit. Stand. Specif., A (1) 34.
sanitary ware, colors for bathroom accessories, A (1) 26.
for school lighting, American recommended practice, A (7) 246.
for tile (Prague), B (7) 256–57.
**Stannic oxide** as opacifier in wet enamels, data, B (7) 246; effect of crushing and grain size, A (11) 349.
**Stannous chloride method** for arsenic determination in steels and cast irons, A (4) 160.
**Steam,** contamination: I, data, A (8) 293.
low-pressure, specific enthalpy of, A (6) 238.
saturated, action on dicalcium ferrite and tetracalcium aluminoferrite, A (3) 94.
**steam generating units:** operation at Hell Gate, A (6) 236; pulverized coal-fired, design, A (6) 236.
**steam plants,** Windsor Station construction, A (6) 238.
**steam power:** developments, A (8) 293; for steel plants, A (8) 293.
**steam tables,** Keenan-Keyes, data for psychrometric properties of air-vapor mixtures, A (6) 226.
steam treatment (water-vapor method) for magnesite brick, A (8) 281.
**Steatite** for molded insulating material, A (9) 309.
nonplastic, physical properties, A (2) 77.
and porcelain for low-voltage insulators, A (6) 224.
products, electric firing of, studies, VII–XI, A (2) 81.
**Steel industry.** See also *Refractories for steel production.*
Electrostal Steelworks, thermocouples and protecting tubes for, A (2) 72.
steam power for, A (8) 293.
in Turkey, fundamentals, A (8) 280.
**Stefan radiation law,** Nernst heat theorem, and Maxwell formula for radiation pressure, relation, A (9) 312.
**Stencil process.** See *Decoration.*
**"Sterlight" lamp** to kill bacteria, A (6) 216.
**Steuben glass,** Waugh's designs, A (6) 210.
**Stilbite,** chemical and X-ray studies for composition data, A (9) 314.
**Stilpnomelane,** composition and structure, A (4) 156.
**Stokers,** automatic, and annular kiln for firing brick, A (11) 362.
for round-downdraft kilns, A (7) 260.
**Stoneware.** See also *Clayware; Earthenware; Pipe.*
chemical, Brit. Stand. Specif., A (7) 256.
and concrete pipes, manufacture and use, A (5) 191.
decoration and colors for, A (8) 282.
errors in manufacture, A (8) 282.
expansion and shrinkage measurements, A (11) 360.
Krasnoufimsk fire clays for, A (2) 82.
pipes, clay-feeding apparatus for, P (10) 332.
and porcelain, developments in Great Britain, A (2) 76.
processes and products in Germany, A (3) 108.
research in plant problems in production, X, A (11) 367.
salt-glazed: for pipes and fittings: kiln atmosphere studies, A (1) 17; salt-glazing defects, A (1) 25; installation of stoneware-pipe factory, A (2) 76, A (5) 191.
salt-glazed, in Staffordshire, history, A (6) 210.
for sewer pipe in Queensland, A (5) 184.
for towers, and selection of proper tower packings, A (4) 146.
and unglazed ware, cracking of, prevention, A (5) 191.
**Stoves,** enameled, English Parkinson type, A (9) 299.
modern equipment for enameling at United Stove Co., A (6) 213.
patent design for range, P (1) 5.
**Strain,** thermal, in opaque bodies, A (5) 200–201.
X-ray measurements of, A (11) 366.
**Strain gages,** Tuckerman, improvement in, A (4) 150.
**"Stroemungsmethode,"** flowing method, use, A (11) 365–66.
**Strontium carbonate** and barium carbonate, enantiotropic transformation of, II, A (11) 366.
production, P (3) 121.
**Strontium minerals,** deposits and uses, B (1) 40.
**Structural materials.** See also *Architecture; Brick; Building materials; Flooring materials; Masonry; Roofing materials; Sewer pipe; Terra cotta; Tile.*
action of atmospheric agencies on, A (2) 75.
adobe house construction, A (7) 252; in southern Calif., A (7) 252.
brick (brickwork), for adobe house construction, dimensions, A (7) 252.
building, P (4) 142; and block wall reinforcing, P (9) 307; building blocks, etc., P (6) 220; effect of use on physical properties of, A (5) 184.
for built-up hollow structures, P (6) 220.
cavity, P (10) 329.
clay and shale, water penetrability of, A (7) 252.
damp-proof courses for, B (1) 18.
fabricated: brick wall panel, P (9) 307, P (10) 329; portable panel construction, P (3) 103.
fuel-economizer, for open fireplace grates, P (1) 25.
for Lincoln tunnel, A (5) 184.
parallelepipedal, structure, P (10) 329.
paving, for stadium construction, A (6) 220.
piers, strength tests, A (9) 307.
for railway engineering, types, A (3) 103.
sand facing of, P (10) 329.
building, insulating properties, B (10) 329.
building blocks, composition types, P (11) 353.
and construction, P (3) 103, P (10) 329.
patent designs, P (3) 107, P (5) 172, P (10) 329.
rectangular, P (7) 252.
and tile, P (6) 220.
ventilation, P (7) 252.
building construction, P (7) 252; and block, P (10) 329; load-bearing structure, P (2) 68.
building stones, weathered portions, analysis, A (1) 17.
building unit and wall, P (4) 142.
cements, high-alumina, test methods, B (7) 245.
ceramic, for industrial plant construction, A (8) 282.
ceramic products, trends in, A (3) 107.
*concrete.* See *Concrete.*
enameled. See also *Structural materials, porcelain enamel.*

**Structural materials, enameled** (*continued*)
building construction, P (4) 136.
copper, A (2) 59.
at Great Lakes Exposition, A (2) 57.
panels, A (10) 324.
sheet-iron panels, methods for setting up: clip-strip and Haskelite systems, A (2) 57; batten and molding process and flanged sheets, A (4) 135; other methods, A (9) 300.
fire protection and fire resistance of, A (3) 122; fireproof material, P (8) 279; firewall construction, P (4) 142.
flashing block, P (6) 220.
flooring materials, semiresilient ceramic tile, P (7) 257.
fused, as riprap, A (10) 329.
glass, aluminum-coated, A (9) 301.
blocks, air-conditioning problems in, A (8) 276.
blocks: for broadcasting studios, A (8) 276; for container plant, A (2) 62; for corrugated container factory, A (9) 303; for locker rooms, A (11) 350; for printing plant, A (9) 304; for troughs, composition of, P (11) 357.
blocks: joining of, P (6) 218; hollow, Owens-Illinois tests, A (8) 276; manufacture, P (8) 278, P (9) 307; use, A (10) 326.
brick: brown porous, A (8) 274; effect on building design, A (2) 75; hollow, properties and use, A (7) 248, A (10) 236; metallized process, A (6) 214–15; process for, P (7) 251; thermal conduction of, A (2) 62.
brick wall, P (5) 182.
building blocks: design, P (2) 67, P (5) 182, P (6) 211, P (8) 277; future of glazing, A (6) 215; making and joining, P (8) 278.
for building materials, III, A (9) 303.
building units, P (2) 68.
for Canadian tobacco warehouse, A (9) 304.
cloth wall-paper, A (3) 99.
colored, for lighthouses, A (3) 99.
for construction use, A (8) 274.
corner molding strip unit, P (10) 323.
corrugated glass roof, P (1) 15.
doorknob, P (2) 68.
for face tile, cast or pressed, black peat slag type, A (1) 10–11.
glass-concrete constructions, A (1) 13.
highly polished building elements, processes, P (10) 328.
hollow: blocks, P (8) 278; building block, P (4) 140; Owens-Illinois tests, A (8) 276.
hollow glass brick, properties and construction use, A (7) 248.
in Italy, A (1) 12.
masonry, P (2) 68.
as materials substitute, A (5) 179.
metallurgical progress in use of, A (10) 326.
multipart building block, P (1) 16.
plant uses, A (11) 350.
plate, for moving-picture studios, A (8) 273.
pressed, formation of grained surfaces on, A (6) 215.
with steel and concrete, A (9) 305.
strength formulas, A (2) 62–63.
tile or panel, P (7) 250.
transparent building unit, P (6) 219.
vitreous panels, P (10) 328.
windows, double glazing of, P (1) 15; double window construction, P (1) 15.
glazed building block, load-bearing, P (7) 250.
glazed wall construction, P (7) 251.
hollow block construction, P (9) 307.
insulating wall construction, P (1) 25.
for insulation, calcined silicic acid, A (7) 248.
lightweight ceramic article, P (10) 329; lightweight, with foamy structure, A (5) 184.
masonry construction, intermediate joint material, P (2) 68; masonry joint, weatherproof, P (5) 191.
porcelain enamel. See also *Structural materials, enameled.*
for buildings, A (4) 135.
"dairy bar," A (1) 8.
for electric substations, A (4) 136.
for iron, progress and future use, A (9)300.
large screen on steel, "Warrior Screen," A (1) 9.
for modern kitchen, A (9) 300.
open-hearth iron for, A (10) 325.
for Paris theater, A (9) 300.
problems in use, A (10) 325.

**Structural materials** (*continued*)
porous building materials, problems in use, A (9) 307.
refractory building materials, unified tests, A (7) 255.
review of developments in structural clay products, A (4) 142.
roofing, P (5) 183; corrugated roofing, P (1) 15; glazed roofing, P (5) 183, P (9) 305.
roofing tile, A (3) 107; physical characteristics, A (5) 190–91; see also *Roofing materials.*
steel frameworks, polarized light for stress determinations in, A (2) 87.
stoneware, towers and tower packings, A (4) 146.
terra cotta for walls, A (8) 282.
tile. See also *Tile.*
block, P (5) 184, P (10) 329.
building, description, P (8) 279.
crystalline glazed, A (2) 76.
roofing. See *Roofing materials.*
or slab from ceramic materials, P (9) 307.
walls: construction or structure, P (8) 279, P (10) 329, P (11) 353; heat-insulating, P (1) 18; masonry walls, Bur. Stand. permeability tests, A (8) 279.
weathering, action of atmospheric agencies, A (2) 75.
**Structure,** anion, of silicates, aluminates, and aluminosilicates, A (2) 55.
of band spectra, interpretation of, A (3) 119.
of clay gels, A (3) 116–17.
of glass. See *Glass, chemical composition (constitution).*
macrostructure studies of raw materials by X-ray, I–II, A (3) 118.
**"Structure tester"** for grindability determinations, A (8) 284.
**Strum-Liouville functions** for heat conduction equation, A (7) 264.
**Sulfides** and silicates, relation between, A (11) 366.
solubility of, to 400°C, thermodynamical calculations, A (7) 262.
**Sulfur** in coal, effect, A (4) 154.
in combustion gases, processes for removal, A (3) 113, A (5) 196.
extraction by I. G. Claus process, A (9) 316.
in gases, extraction process, P (11) 363.
in insoluble residues from hydrogenated coal, A (10) 336.
in oil, determination, A (10) 342.
**Sulfur boiling-point apparatus** with internal electric heating, A (1) 31.
**Surface testing,** polishing, surface flow, and formation of Beilby layer, IV, A (3) 92.
roughness, instruments for, P (10) 336.
**Suspensions,** clay and gels, colloidal properties, A (6) 229.
dilute, agglomeration and viscosity in, A (8) 290–91.
of glass spheres, viscosity measurements of, A (8) 285–86.
**Sweden,** glass and pottery art production, A (7) 248.
**Syenite,** processing of, P (3) 118.
**Sylvinite** in N. Mex., occurrence and mining, A (10) 340; sylvite in N. Mex., A (10) 340.
**Symbols** of thermodynamical and physicochemical quantities and use, A (2) 86.
**Synthesis** of aluminates and aluminoferrites of calcium, effect of mineralizers, A (1) 6.
*vs.* natural origin of kaolin minerals, A (1) 36.
of oxides, silicates, and aluminosilicates, effect of fluorides as mineralizers on, A (2) 84.
of silicates, studies at Geophysical Lab., A (1) 39.
**Synthetic materials,** grinding and polishing of, A (5) 169.
**Synthetic spinels,** production, P (6) 235.

**Tableware.** See also *Chinaware; Decoration; Porcelain.*
American, style in, A (4) 130.
ceramic dinnerware, proposed modifications of classification, A (9) 309.
glass and china, modern trends in, A (7) 243.
patent designs for ashtray, P (11) 347.
bowl, P (4) 130.
coffeepot, P (8) 271.
creamer, P (4) 131.
dish, P (11) 347; covered dish, P (8) 271
jug, P (4) 131.
plates, P (1) 5, P (2) 54, P (4) 131, P (7) 244, P (9) 298.
salt or pepper shaker, P (4) 131.
saucer, P (7) 244; saucer for cup, P (2) 77.
soup cup, P (2) 54.
sugar bowl, P (4) 131.

**Tableware,** patent designs (*continued*)
teacup and teapot, P (4) 131; teapot, P (9) 298.
white, history of beginnings in U. S., A (4) 147.
White House china, history from 1877 to present time, A (4) 129–30; production of Dresden, Haviland, Lenox Belleek, Limoges-Haviland, Minton, and Wedgwood, A (4) 129–30.
**Taenolite,** Ark., physical and optical properties, A (5) 198.
**Talc,** behavior toward fused chlorides of bivalent metals, A (6) 232.
in cement, use of talc refuse, A (11) 347.
and magnesite deposits in eastern Alps, data, A (5) 196.
for porcelain, studies, IX–XII, A (5) 191; and porcelain bodies, vitrified pyrophyllite talc in, A (5) 198.
pyrophyllite, and ground soapstone, B (11) 365.
and pyrophyllite in semivitreous bodies, use, A (7) 257.
sources of: in N. C., data, A (4) 158; Ukrainian deposits, A (2) 83.
thermal decomposition of, magnesium silicate in, A (6) 232.
**Talc-kaolin,** electrical resistance of, A (3) 109.
**Tams, James,** dean of potters, A (3) 123.
**Tank blocks,** Corhart, history and data, A (2) 71; see also *Refractories for glass-melting furnaces.*
**Tanks, glassmelting.** See also *Furnaces, glass tanks; Pots, glass; Refractories for glassmelting furnaces.*
gas heating and heat transfer in, A (2) 62.
for glass-drawing, P (6) 218.
heated and unheated, heat transfer in, by gas streams, A (7) 248.
Italian clays for, A (3) 104.
method for cooling fused glass in, P (5) 183.
patent designs, P (5) 183, P (8) 277.
refractories for superstructure and regenerators of: insulating materials, I; glasshouse refractories, II, A (11) 354.
thermal performance of, data, A (8) 275–76.
wall-type, P (10) 328.
weir for, P (10) 328.
**Tanks, steel,** acidproof brick with sulfur cement joints, A (10) 332.
**Tantalite deposits** of Uganda, A (9) 314.
**Tantalum** and niobium, analytical chemistry of, B (9) 317.
**Tars,** treatment, B (3) 114.
**Technical glass.** See *Glass, chemical; Glass, technical.*
**Tektites** (australites) in Australia, A (2) 83.
**Telescope mirrors.** See *Glass, mirrors.*
**Tellurium** and selenium in Ont., recovery, A (11) 364.
**Temperature control and measurements,** automatic, for hot blast temperatures, A (1) 29.
and electromotive force measurements, reference tables, A (6) 226.
method for high temperatures, P (5) 194.
system for, A (5) 192.
**Temperature measurement apparatus,** checking and gaging of, for correct recording, III, B (3) 101.
control apparatus for vitreous enameling, A (10) 324.
electric, A (6) 225.
for glassmelting furnaces, directions for installation, I, B (3) 101.
regulation of electrical industrial furnaces, A (2) 79.
regulators, types, A (2) 79.
temperature-responsive types, P (10) 338.
**Tennessee,** ceramic resources, A (9) 313.
**Tennessee Valley Authority** (TVA), clay resources, B (4) 159; phosphoric acid plant, process, A (9) 308.
**Terra cotta.** See also *Art and artware; Clayware.*
acid-stable ceramic bodies, microscopic studies of grog and bonding material for, A (1) 25.
andirons of, A (2) 53.
"Christ of the Rockies" statue, A (3) 107.
defects in: causes of poor adherence of engobes o, A (4) 146; scumming, causes and cure, A (4) 142.
grinding machine for, P (9) 309.
**Terra sigillata,** coatings for pottery, P (5) 172; Samian ware, use of names for, A (5) 171–72.
**Tetrametaphosphate** of sodium, transformation of, A (10) 343.
**Texas,** ceramic resources, A (10) 338.
**Thermal apparatus** and methods of measurement, A (4) 152.

**Thermal conductivity** of building materials, B (10) 329.
of insulating materials, measurements for, A (5) 188, A (7) 254.
of insulating refractories, "Touchau" (contact) method, A (6) 222.
method for gas analysis, A (4) 153.
studies, A (5) 189.
**Thermal conductivity apparatus** for high temperatures, celite type, A (4) 149; for high temperatures, tests, A (5) 193–94.
**Thermal endurance** of glass, "technical" *vs.* "true," A (4) 137.
**Thermal ohm** as unit of thermal resistance, use, A (3) 118.
**Thermal strains** in opaque bodies, measurement, A (5) 200–201.
**Thermal units,** conversion tables for, A (3) 118.
**Thermax steels,** ferritic-martensitic or ferritic-austenitic type, A (1) 31.
**Thermic rays,** permeability of some materials for, A (4) 139.
**Thermocouples,** C-SiC, metallurgical applications, A (3) 111.
calibration of, sulfur boiling-point apparatus for, A (1) 31.
electric, comparative study, A (2) 78.
iron-constantan and copper-constantan, reference tables for, A (6) 226.
porcelain tubes with lutes as stable protective casings for, A (1) 30.
portable potentiometer, use, A (2) 79.
and protecting tubes for high-temperature control, A (2) 79.
silicon carbide for temperatures to 1800°C, A (1) 30.
**Thermodynamics** of anhydrous chlorides of chromium, B (1) 40.
for calculation of solubility of sulfides to 400°C, A (7) 262.
in hydrocarbon research, A (5) 196.
and physicochemical quantities, symbols and use, A (2) 86.
properties of *n*-butane, XIX, A (5) 195; of isobutane, XXI, A (10) 337.
properties of hydrocarbons, A (8) 287.
spectroscopic, A (9) 312.
theory and formula of glass electrode, A (8) 292.
**Thermoelectric method** for flame temperature measurements, A (6) 227–28.
**Thermoelements,** checking and readjustment, III, B (3) 101.
**Thermolux glass** for heat insulation, A (9) 303.
**Thin sections** of coal for macroscopic and microscopic tests, B (11) 362.
**Thiokol** as plasticized filler for pavements, A (6) 220.
**Thiourea** for microchemical test for selenium, A (5) 201.
**Thixotropy,** definition and studies, A (2) 86.
of Japanese acid clay suspensions, A (4) 158.
studies on clay slips, A (1) 37–38.
**Thomson formula** for water-film thickness, A (2) 84.
**"Thorax-Restex" glass** for steel bridge construction, A (9) 305.
**Thorpe's dictionary** of applied chemistry, Vol. I, A–Bi, B (4) 164.
**Tile.** See also *Structural materials.*
Calrod heating unit for flue tile mold, A (3) 109.
ceramic, in Switzerland, test results, A (7) 255.
ceramic facing, designation of name, A (7) 255.
colored, engobes for, A (5) 184.
for cork undersurface, fixing of, A (4) 146.
crazing of glass wall tile in service, A (3) 108.
crystalline glaze for, for subway facing, A (2) 76.
drain, connector for, P (7) 252.
electric heat for firing of, A (7) 260.
fired, standards for production, B (7) 256–57.
fireplace, mat and crystalline glazes for, A (3) 93.
floor, classification of various types, A (6) 223; flaws, cause, A (6) 223; production, A (8) 282; semiresilient ceramic flooring, P (7) 257.
floor and wall, glazed and unglazed, *vs.* nonceramic substitutes, A (3) 107.
glazed: manufacture at Vinohrady Ceramic School, A (7) 255–56; from palace of Rameses II at Kantir, B (6) 210; and unglazed, in Slavonic fortification (Moravia), A (7) 243.
glazing and associated treatment, P (6) 223.
hollow, with long, zigzag recess, P (1) 25.
**Tile** (*continued*)
medieval English picture tile, B (6) 210.
paving. See *Paving materials.*
ridge, manufacture, P (10) 332.
for roofing, in Australia, A (3) 107.
roofing and building, P (1) 25; clay roofing tile, P (2) 76; flaws in structure of, A (7) 255; see also *Roofing materials.*
silicosis danger in production of, A (9) 318.
soluble salts in, effect, A (3) 108.
vitreous composite, and concrete staves, manufacture, P (2) 76.
zigzag kiln for production of, data, A (7) 260.
**Tile apparatus,** patent designs, P (2) 80, P (3) 112, P (4) 153; for tile fettling, P (5) 195.
**Tin** as chemical raw material, A (4) 158.
in ores and metallurgical drosses, potassium bromate for determination in, A (4) 161.
**Tin oxide,** white, production, P (10) 343.
**Tingere et Aurum ware,** enameled pottery, A (10) 323.
**Titania** and alumina in refractory clays, effect on refractoriness, A (8) 280.
**Titaniferous material,** attacking water-insoluble, P (1) 45.
ores: ball-mill and pug-mill attack in, P (1) 45; soluble titanium compounds in, recovery, P (1) 45.
**Titanite** and tilasite, crystal structure studies, A (1) 39.
**Titanium,** compounds from titanium ores, use of waste porcelain in manufacture of, P (1) 45.
in Espiritu Santo, B (2) 83–84.
and minerals of, occurrence and chemical composition, A (2) 83.
new mineral from Nellore, chemical and mineralogical study of, A (7) 261.
new wave-lengths in arc spectra of, A (4) 162.
ores: decomposition process, P (7) 263; processing of, P (8) 290.
**Titanium dioxide** in acid-resisting enamels, A (6) 212.
in clays, sands, and loams, origin, A (6) 230.
commercial, discoloration in daylight, A (1) 42.
in enamels, data, A (11) 349.
–$FeTiO_3$, $FeTiO_3$–$Fe_2O_3$, $FeTiO_3$–$Fe_2O_3$, and $FeTiO_3$–$Fe_2O_3$–$TiO_2$, studies, A (7) 261.
magnesium oxide, X-ray tests, A (11) 366.
pigments of, production, P (6) 235.
preparation, P (5) 203, P (8) 292; processing method, P (1) 45.
products, manufacture and application, P (2) 81.
pure, preparation, P (6) 235.
separating brookite and rutile from zircon for, P (11) 365.
–$SiO_2$, studies, A (4) 162.
**Titanium-iron arsenates,** hydrated, method of making, P (3) 121.
**Titanium-oxygen compounds,** preparation, P (9) 317.
**Titanium pigment composition,** patent process, P (6) 236.
**Titanium silicides,** hydride process, III, A (11) 345–46.
**Titanous salts,** oxidation of, P (10) 343.
**Titrating apparatus** for pickling room, A (4) 134.
**Tone, F. J.,** biog., A (10) 344.
**Torsion apparatus** for refractory materials tests, A (5) 186.
**Torsion balance,** simple spring type, A (6) 226.
**"Touchau" (contact) method** for thermal conductivity test on insulating refractories, A (6) 222.
**Trachyte,** primitive types, use, A (10) 340.
**Trade marks,** choosing and protecting of, A (6) 236.
for porcelain enamel *vs.* fired organic paints, A (3) 97.
**Trade names,** alloys, Kovar (Fe–Ni–Co alloy), P (3) 102.
alloys, "Ni-Resist" and "Nicrosilal," A (5) 192.
alloys, tabular data, A (6) 225.
Analygraph for recording thermal conductivity changes of gas atmosphere, A (4) 149.
"AR" steel, properties, A (4) 127.
"Gitempite," refractory cement, A (6) 221.
glass, Agfa-Infrarot-810 plates, A (8) 272–73.
Corning glass 015 and Silichrome for glass electrodes, A (11) 360.
"Dethermalglas," sunlight and electric arc types, A (8) 271.
Durax, heat-resisting, A (1) 12.
Foma-Panchro-Isolar plates, A (8) 272–73.
**Trade names,** glass (*continued*)
Kavalier "35" and Kavalier "Isis," A (2) 66.
Minos and Euphos types, A (5) 178.
Ophthalmoprotekt for goggles, A (8) 272–73.
Plexi, colorless and blue types, permeability of, A (4) 139.
Pyrex-brand, Nonsol, Ergon, Geräte 20, Resista, Duran, A (7) 249.
Schott GG-3 type, A (6) 216.
Thermolux, for heat insulation, A (9) 303.
"Thorax-Restex," for bridge construction, A (9) 305.
"Uro-Punktal," Zeiss, A (6) 215.
inhibitors, studies, A (4) 136.
insulating materials, Corundite, Wyolite, and Armstrong brick, A (7) 245.
Iporite concrete, A (5) 184.
Karcite, for laboratory equipment, A (4) 165.
"Kemite," artificial cordierite, A (11) 358.
mills, grinding and pulverizing, Hardinge mill, Raymond automatic pulverizer, I. C. grinder, and Lopulso mill, A (7) 258.
Nuglu, abrasive bond, A (8) 268.
opacifiers, Hy-Opax and Zinnit, A (3) 97.
Opaltone, for tinted window glass to kill sun glare, A (4) 140.
Perminal W, textile wetting agent, A (1) 47.
permissible explosives and blasting devices, B (5) 194.
Piasoleum, rubber latex base adhesive, A (4) 165.
refractories, Carbolox, bonded carbide, A (2) 74.
"Detred" and "Detrick" blocks for combustion chambers, A (3) 105–106.
Duralite, French neutral type, A (3) 105.
"Jargal," A (11) 354.
Metalkase brick, A (1) 22.
Monofrax types, A (4) 145, A (5) 187.
Ritex process, A (1) 22.
Saxpyre brick for hearth bottom to slag line, A (11) 354–55.
Sikarbid, A (7) 254.
Spinella, chrome-magnesite brick, A (4) 145; Spinella brick for open-hearth and electric furnaces, A (11) 354–55.
Supermag and Diazite, basic and neutral refractories, A (11) 354–55.
Thomasite, clinkered dolomite, A (1) 19, A (4) 145.
Zonolite, A (7) 254.
Setit for sheet-iron ground coat, effect, A (9) 300–301.
Thermalite for insulation, A (5) 195.
Thiokol for road filler, A (6) 220.
Ultra-Sil, as setting-up agent, to prevent fishscaling, A (3) 96.
Zorbit for pavements, A (9) 307.
**Transmission belts,** care of, A (5) 192.
**Transparent methacrylate polymerides** as glass substitutes, A (9) 319.
**Tricalcium aluminate** and Portland cement clinker, microstructure, A (4) 133.
**Tricalcium aluminate hexahydrate** and anhydrous tricalcium aluminate, properties, A (9) 298–99; preparation, A (9) 298.
**Tricalcium silicate,** synthesis of, process, A (4) 160; X-ray tests, A (9) 317.
**Tridymite** and cristobalite, thermal expansion of, VI–XII, A (5) 200.
**Tridymite silica brick.** See *Refractories.*
**Trona process,** chemistry of, from standpoint of phase rule, A (10) 338.
for potassium chloride production, A (10) 340.
**Tubing,** luminous, of porcelain enamel stainless steel, A (2) 58.
**Tuckerman optical strain gage,** improvement in, A (4) 150.
**Tulip ware** of Pa. Germans, P (5) 172.
**Tumbler test** for coal, A.S.T.M. proposed method, A (4) 154.
**Tungsten** and other refractory metals, powder metallurgy, A (8) 293.
**"Tunnel of Light,"** Westinghouse color matching booth, A (10) 324.
**Turbidimeters,** method for particle measurement, A (10) 335.
Wagner, for measurement of 325-mesh sieve materials, A (8) 283.
**Turner, W. E. S.,** Fellow of the Royal Society, A (9) 319.
**TY reduction crushers,** A (3) 111.

**Unfired ceramic bodies,** strength of, A (8) 293–94.
**Uraninite,** N. H., occurrence, crystal habit, and composition, A (10) 340.
**"Uro-Punktal" glass** of Zeiss for goggles, A (6) 215.

**Vacuum apparatus,** ceramic material for, A (4) 150.
vacuum deaërator, construction, A (6) 226.
vacuum drying oven with automatic temperature control, A (6) 226.
vacuum press for porcelain industry, A (2) 76.
**Vacuum pressing** of refractory brick, A (9) 308.
**Vacuum technique,** patents on methods and apparatus for, A (2) 79.
**Vaporization equilibrium constants** in crude oil–natural gas system, A (1) 34.
**Vapor-pressure humidostat** and thermostat of Bell Lab., A (4) 153.
**Veatchite** (new calcium borate) from Calif., A (10) 341.
**Ventilation** of building block, P (7) 252; see also *Air conditioning; Dust apparatus.*
**Vermiculite** and bentonite in Tenn. Valley region, B (4) 159.
exfoliating, means for, P (11) 361.
for insulating structure, P (2) 90; for thermal insulating material, A (1) 23.
**Verneuil fusion process** for synthetic spinel production, P (9) 317.
**Viennese porcelain,** Imperial, history, A (6) 209–10.
**Villard-Winter method** for fluorine determination in presence of amorphous silica, A (2) 84.
**Vinohrady Ceramic School.** See *Ceramic education.*
**Virial theorem** and fusion theory, A (2) 87.
**Viscosimeters** (viscometers), capillary and rotating types, for flow resistance of peat masses, XI, A (9) 311.
Frank viscometer, modified, for tests on fused glass and slags, A (5) 194.
for measurement of transverse and laminar flow of viscous liquids, A (7) 264.
patent designs, P (6) 227, P (9) 312.
rotational type for high viscosity materials, A (9) 311.
Wilhelm-Ostwald, for vibration viscosimetry, A (8) 285.
**Viscosity.** See also *Flow; Plasticity.*
and agglomeration in dilute suspensions, A (8) 290–91.
of blast-furnace slags, data, A (6) 234–35.
and electrical conductivity of fused salts and glasses, A (10) 327.
of fused silicates, apparatus for, A (9) 311.
of glass: effect of temperature on, A (2) 63; reaction-rate theory of, A (7) 249; tests, A (8) 276.
and moisture in green ware, apparatus for test, A (9) 310.
and plasticity of disperse systems: comparative methods for tests on peat masses, XI, A (9) 311.
and Reynold's number, relation, A (4) 164.
of slags in $SiO_2$–CaO–FeO systems, A (11) 366.
and surface tension of simple glass, effect of atmosphere, A (9) 302.
of suspensions and solutions, inertia effects of suspended glass spheres, VIII, A (8) 285–86.
of whiteware clays, and acid and base binding capacities, A (6) 229.
**Viscosity apparatus** for transformation point tests on glass, A (9) 302.
**Viscous liquids,** longitudinal waves of high frequencies in, A (8) 291.
surface-tension measurements, A (11) 351.
transverse and laminar flow tests, A (7) 264.
**"Vitrail"** (stained glass), A (7) 249.
**Vitreous bodies,** patent designs, P (8) 278, P (9) 309.
**Vitreous material** for clock, P (9) 298.
transparent, composition, P (8) 279.
**Vitreous silica,** specific heats of, A (8) 272.
**Vitreous ware,** coloring of, P (8) 279.
hardened (American Optical Co.), P (5) 183.
vitreous china, story of, A (5) 181.
**Vitrified ceramic linings** for germ protection, A (5) 204.
**Volcanic ash,** distribution, A (10) 339.
**Volcanic tuffs** and silicified rock, geology, A (1) 36.
**"Vorspannungs" method** of preimposed stresses in glass to improve brittleness, A (6) 214–15.

**Wagner method** for cement clinker surface measurement, A (3) 110–11.
**Wagner turbidimeter** for particle measurement of 325-mesh sieve materials, A (8) 283–84.
**Wagner theory** on breakdown field strength of solid electric insulating materials, A (3) 99.
**Wakley and Black method** of oxidation of soil humus, A (2) 83.
**Washing apparatus** for breaking up minerals with clay, loam, etc., P (4) 153.
**Waste glass** (powdered), sintering properties, A (6) 237.
**Waste heat,** recuperation of, data, A (5) 189.
**Waste-heat drying.** See *Drying.*
**Waste materials,** casting scrap for alkaline slip, A (4) 147.
glazes, salvaging process, A (3) 111.
from manufacture of titanium compounds from titanium ores, P (1) 45.
pickling acids, pipe lines for removal, A (6) 213.
slate waste, German use, A (3) 122.
sludge and waste water, centrifugal pumps for, A (5) 192.
**Water,** filtration softening of, A (8) 289–90.
hardness of, direct titration determination method, A (4) 160.
**Water films.** See *Liquid films.*
**Water glass,** preparation of, without alkalis, A (3) 120.
**Water-vapor treating method** for magnesite brick, A (8) 281.
**Waterton equation** for viscosity studies of liquids, A (10) 327.
**Wear resistance.** See *Hardness.*
**Weathering** of building materials, action of atmospheric agencies, A (2) 75.
of building stones, origin, A (1) 17.
clayey, and kaolinization, chemical studies, A (10) 338.
masonry joint, weatherproof, P (6) 191.
of rocks: effect on road materials, A (9) 315; ice as agent of, A (2) 82; studies, A (6) 231.
of sand-lime brick, freezing and thawing resistance, A (4) 142.
**Weber and Sauer method** of chemical resistance of glass, A (6) 214.
**Weighing apparatus,** automatic, for discrete particles, P (2) 80.
precision type, A (11) 360.
**Weissenberg diagrams** for "iron-rhodonite," natural pyroxmangite, and natural rhodonite, A (1) 37.
**Welding** of alloy steels, A (3) 98.
arc, metal deposition in, A (5) 174.
arc-welding atmospheres, A (10) 324.
butt welds, fatigue tests of, in structural plates, A (3) 96.
of chromium steels, review to July 1, 1937, A (10) 325.
finishing welds in stainless steel, A (6) 207.
flash, method, P (2) 59.
fusion process for wrought iron, A (3) 96.
of gray iron castings, A (1) 10.
hard-facing alloys for, A (3) 110.
heat effect in, literature review to 1937, A (3) 97.
of low alloy steels, report of subcommittee, A (5) 174.
in 1937, review, A (10) 325.
shrinkage distortion in, literature review to 1937, A (1) 9; shrinkage distortions and stresses in, A (6) 213; shrinkage stresses in, literature review, A (5) 175.
spot welds, effect of accurate timing, A (1) 7.
of stainless steel, A (3) 98.
weld seams, blisters in, types and cause, A (11) 348.
welded seams, alternating-current nondestructive test, A (3) 95.
welds, coarse structure and static strength of, relation, A (11) 366.
welds, X-ray method for stress relief studies, A (3) 98.
**Wells, W. E.,** pioneer potter, A (2) 89.
**Westman and Hugill grading machine** for coarse aggregates, A (3) 103–104.
**Weyl, W.,** work on glass constitution, review, A (2) 66.
**Whipple micrometer** for plankton concentration and dust counts, A (9) 310.
**Whiteware.** See also *Porcelain; Sanitary ware.*
ceramic composition, P (3) 109.
ceramic material for heat or electrical conductors, P (10) 333.
ceramic raw material substitute for English china clay, P (1) 27.
compounding ceramic products, P (2) 77.
decoration, economical method for, A (4) 129.
dry-mixing process, A (11) 359.
earthenware glazes on, action of, in glost kiln, A (3) 107–108.
electrical resistance up to 900°C, A (11) 358.
fine ceramic material, composition, A (10) 332.
Ga. kaolin for, A (1) 36–37.
**Whiteware** (*continued*)
glazed, glost warping of, A (2) 76.
glazes for, darkening in decorating kiln, A (3) 108.
heat treatments for, computation of, A (4) 147.
heatproof china bowls in kitchen mixers, A (10) 332.
lead frits and fritted glazes for, studies, B (1) 26.
pothead design, P (7) 257.
pots, locking cover for, P (3) 109.
sintered ceramic material, P (1) 26–27; sintering finely powdered materials, P (2) 77.
steatite in, physical properties, A (2) 77.
**Whiteware plants,** Homer Laughlin China Co., salvaging glaze materials by electrostatic process, A (3) 111.
**Wick test** for efflorescence on brick, B (1) 18.
**Widia,** Krupp hard metal, data, A (6) 225; Widia steel tools for glass turning and milling, A (8) 276.
**Wilhelm-Ostwald viscometer** for measurement of suspensions in cement or silica slurries, A (8) 285.
**Willemite,** artificial, reproduction, A (7) 258.
**Winter diamond grinding disks,** A (11) 345.
**Wire fabric** as wired-glass substitute, P (8) 279.
**Witte's method** for measurement of powder surface, A (1) 31.
**Wohlenberg's method** for heat absorption calculations on cooled furnace walls, A (3) 103.
**Wolframite** and scheelite in southern Rhodesia, A (9) 315.
**Wollastonite,** solid solutions, laboratory studies, A (10) 340–41.
solid solutions from County Antrim, A (1) 39–40.
X-ray studies of structure, B (3) 117.
**Wood, Ralph,** modeler of Toby jug, A (2) 53.
**"Wood's light,"** application to ceramic industry, A (4) 159–60.
**Wool,** mineral: or rock, bond for, P (11) 352; and spun rock wool, production, A (8) 275; rock, blow chamber for, P (11) 352; see also *Glass, fiber; Insulating materials.*
**Worcester pastille burners,** A (6) 210.
**Workmen's Compensation Laws,** A (7) 265–66.
**Wyolite** for atmospheric furnaces, A (7) 245.

**X-ray apparatus,** microanalyzer, A (9) 311.
with Philips Metalix tube for silicosis studies, A (3) 122.
**X-ray diagrams,** measuring instrument for, A (8) 285.
**X-ray diffraction method** for identification of minerals in clays, A (1) 37.
and radiography, symposium on, 1936, B (6) 235.
Ruheman camera for low-temperature studies, A (2) 77–78.
for silica glass structure, A (3) 101.
for studies of soda-boric oxide glass, A (9) 305.
for study of crystalline siliceous minerals in silicotic lungs, A (8) 294.
**X-ray studies and tests** applied to industrial problems, A (1) 27.
of coarse structure and endurance strength, A (11) 366.
for cryolite disintegration, A (7) 263–64.
of crystals, isomorphism principles, A (5) 200.
and gamma-ray irradiation, technical auxiliary devices for, A (10) 335.
and gamma rays, industrial application, A (1) 45.
on glass, fine structure, A (2) 87, A (3) 101, A (5) 181; of glass structure, A (10) 327.
irradiation, application of, A (1) 27.
on liquid and glass structure, A (2) 87; on silica glass, A (3) 101; on fine structure of glass, A (5) 181.
for macrostructure of raw materials, I–II, A (3) 118; defects in systems, V, A (11) 360.
in metal research, A (11) 367.
of metastable $\gamma$-$Fe_2O_3$ phase in magnetite, A (11) 363–64.
on nickel hydrosilicates, A (6) 235.
for particle-size measurement, A (11) 360.
photographic principles of, for material testing, A (11) 366.
qualitative metallographic technique, A (5) 201.
radiographic studies of dust excretions from lungs, A (11) 368.
spectrographic determination of lanthanum, neodymium, and gadolinium, in presence of other rare earths, A (7) 264.

**X-ray, studies** (*continued*)
spectrum analysis studies for iron and steel, A (11) 366.
for strain measurements, A (11) 366.
of systems $TiO_2$–MgO, $ZrO_2$–MgO, and $ZrO_2$–$TiO_2$, A (11) 366.
X-radiogram for study of clay mineral properties, A (11) 363.
X-ray densography, process, A (11) 366.
X-ray shadow pictures *vs.* magnetic tests for comparisons of nondestructive materials testing, A (11) 365.

**Zeiss quartz spectrograph,** "Q 24" for beryllium determination, A (6) 229.
**Zemyatchenskii method** for determining porosity of porcelain, A (9) 310.
**Zeolites,** artificial, method of making, P (8) 292.
natural and artificial, industrial use, A (2) 73.
in pozzuolanas, effect, I, A (4) 132.
**Zinc,** dithizone method for measurements of small amounts, A (8) 291.
European and world data, A (1) 36.
**Zinc** (*continued*)
mercuric thiocyanate method for gravimetric determination, A (10) 342.
quantitative separation by hydrogen sulfide: from nickel, I; from cobalt, II, A (11) 366.
**Zinc-bearing slags.** See *Slags*.
**Zinc ores,** lead and cadmium separation from, P (7) 264–65.
**Zinc oxide** and chromic oxide, effect of various gases on course of reaction between, A (5) 200.
in glass, use, A (2) 67.
–FeO–CaO–$SiO_2$, zinc-bearing slags in, fusibility of, A (6) 232.
from slag and ores, production, A (6) 231.
zinc-white pigments, preparation, P (6) 235.
**Zinc white** from metallic zinc, production, A (6) 231.
**Zincite,** artificial, reproduction, A (7) 258.
**Zircon,** brookite and rutile separation from, for titanium oxide, P (11) 365.
density and structure, II, A (8) 288.
"green" color of, data, A (6) 233.
low-density, A (8) 291.
**Zircon dioxide-magnesium oxide,** X-ray tests, A (11) 366.
**Zircon minerals** for refractories, A (1) 23.
**Zircon silicates** in Lowoser tundra, A (7) 263.
**Zirconia,** crystallized, preparation, P (4) 164.
fused Zr mineral, treatment, P (3) 121.
**Zirconium,** double silicates of, production, P (11) 367.
natural resources, A (9) 313.
phosphate method for determination, A (3) 118.
**Zirconium compounds,** treatment, P (7) 265; use in refractory and ceramic industries, A (10) 341.
**Zirconium dioxide–titanium dioxide,** X-ray tests, A (11) 366.
**Zirconium oxide** for opacifier, use, P (2) 59.
refractory ware, baddeleyite for, A (11) 354.
**Zirconium oxycarbide and silicon carbide,** preparation, P (5) 203.
**Zirconium silicates,** porous, coherent types, production, P (2) 87.
**Zirconium silicide,** structure, A (10) 343.
**Zonolite** for insulating products, A (4) 157.
**Zorbit** for brick and block pavements, A (9) 307.

**THIS YOU OWE TO YOURSELF**

**WHY NOT WEAR THE SOCIETY KEY?**

The cost is $3.25 for a gold-filled and $6.50 for a solid gold key. Address all orders to the American Ceramic Society, 2525 N. High Street, Columbus, Ohio.